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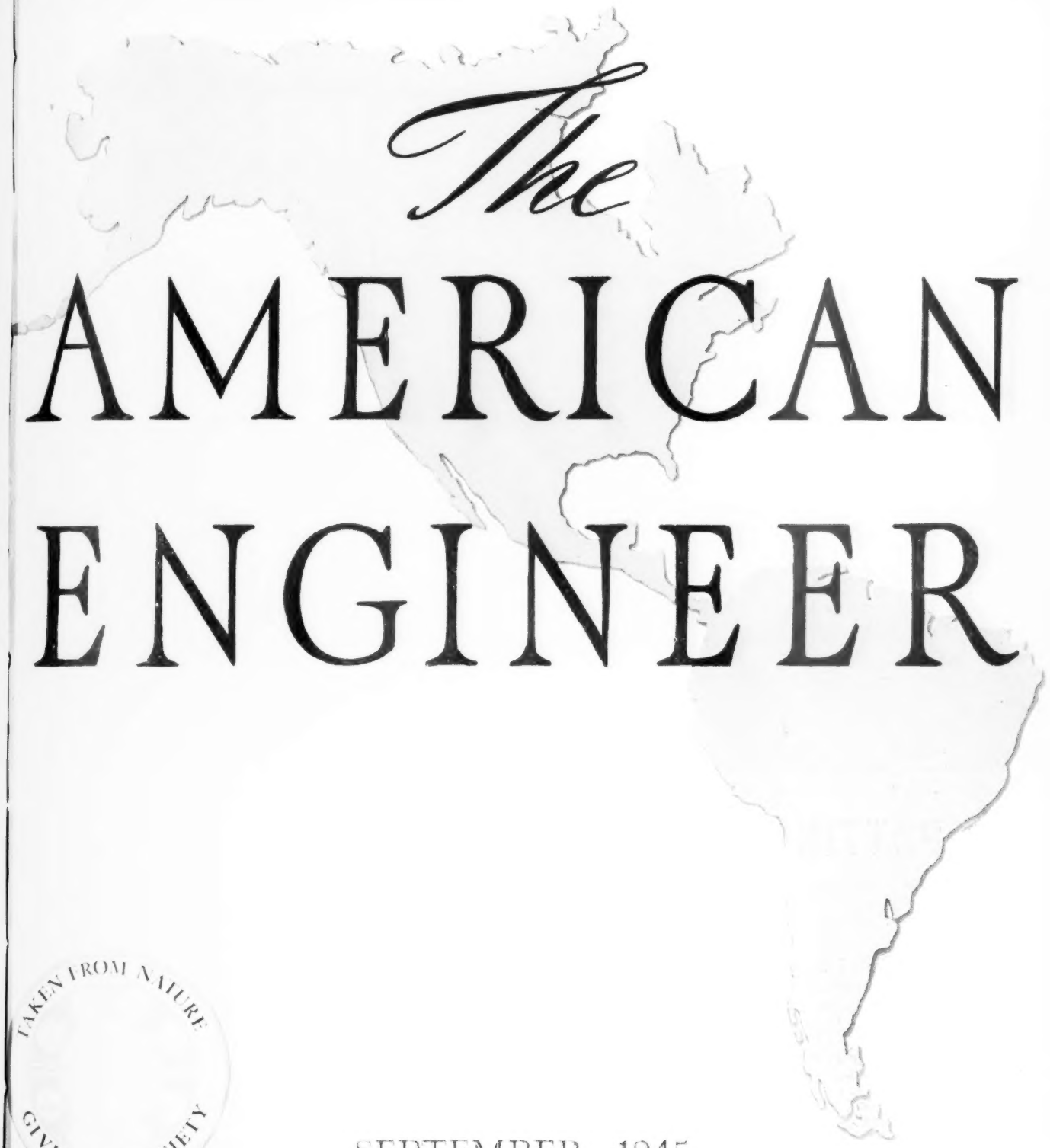

The AMERICAN ENGINEER

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SEPTEMBER, 1945

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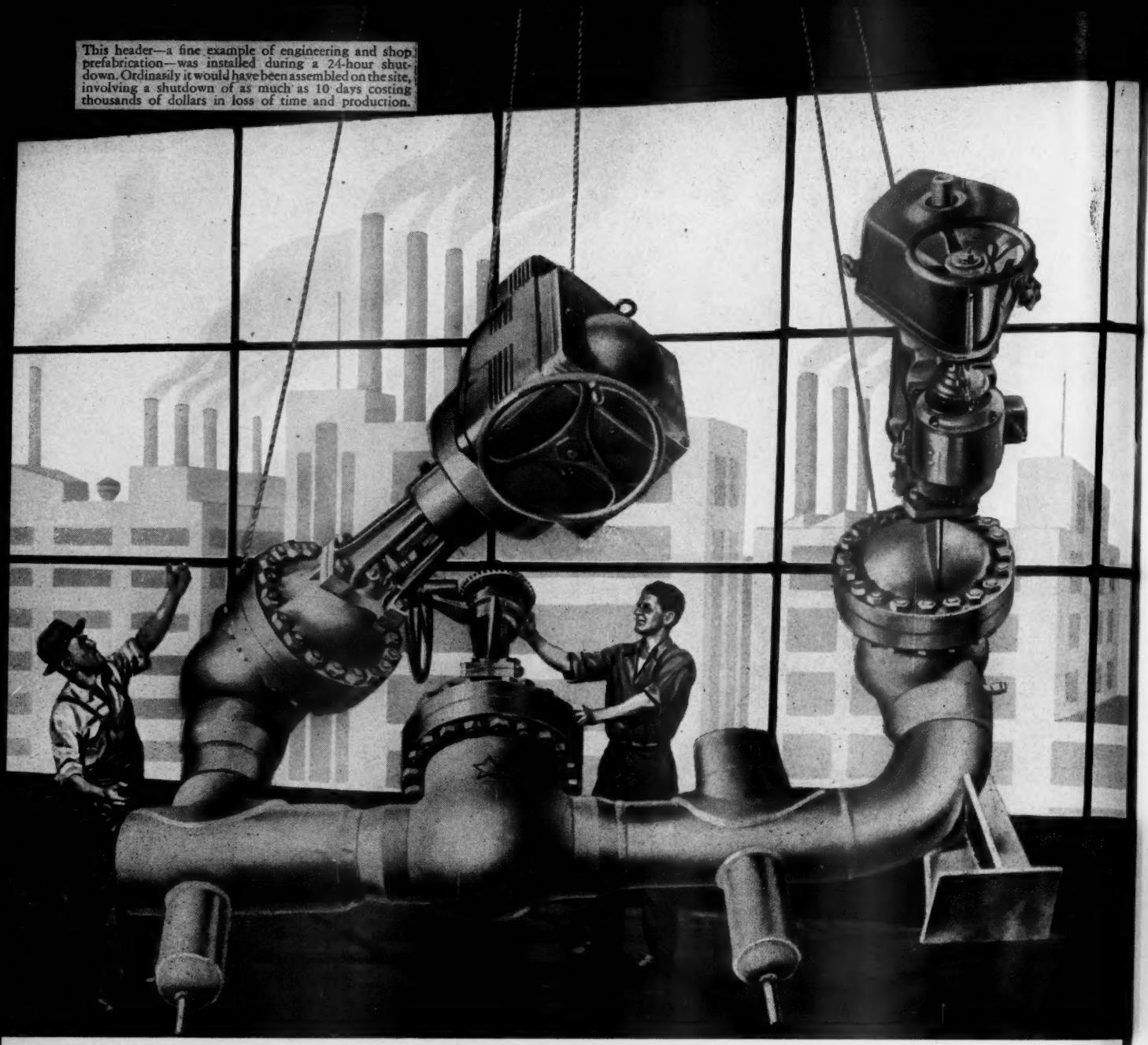

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THE AMERICAN ENGINEER

Published monthly in the interest of the Engineering Profession by the National Society of Professional Engineers.

VOLUME 15, NUMBER 9 — SEPTEMBER, 1945

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Subscription Rates

$1.00 per year in advance to members of the National Society of Professional Engineering and its Affiliated Societies. $2.00 per year in advance to non-members in U.S.A. and its possessions and Canada and Mexico. Single copy — 25c. Foreign, $4.00 per year.

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Change of address on Form 3578 should be sent to the National Society of Professional Engineers, National Press Building, Washington, D. C.

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Reentered as second class matter, March 11, 1942, at the Post Office in New York, under the Act of March 3, 1879.

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Building Plans for a Better World

Posing Problems and Responsibilities

for the Professional Engineer

The unexpected end of World War II this past month is vivid proof of the extraordinary effectiveness of our recently developed materiels of war. Radar, jet propulsion, amazing advances in plastics, and above all, the atomic bomb . . . have hastened the early defeat of our enemy and speeded civilization on to a shining new era of peace.

To American engineers goes much of the credit for this victory. American Engineers, working in the laboratory, in industry, in the field . . . working doggedly, tirelessly through the years of conflict have unleashed these scientific discoveries . . . forged them into mighty weapons no enemy could withstand. Today our war work is over . . . but we lay it aside only to assume an even greater responsibility . . . the adaptation of these scientific principles of warfare to peacetime living.

The considerations involved are tremendous to the world at large. Each of these developments is revolutionary enough to bring into being new concepts of social and economic relationships. In our own profession, it means the outmoding of engineering standards of design that have been universally accepted and employed by industry prior to the war. And this faces us squarely with the necessity for evolving new ones, specifically adapted to the harnessing of the great forces our activities during the war years have brought to light.

It is an inescapable responsibility . . . one that the Engineering Profession must meet with grave, thoughtful determination. Now more than ever it is up to us to ceaselessly direct all our talents to the public good . . . to utilize these stupendous forces in such a way that the well-being and security of civilization will be bettered by them.

Fortunately for us, the essential machinery for safeguarding this responsibility is already in existence. It is directly traceable to the National Society of Professional Engineers, one of whose principal objectives has always been the maintenance and improvement of national standards for the control of engineering practice. Through its constant pressure, the move to license all practicing engineers as Professional Engineers has made much headway. At the present time, this plan is in operation in almost every state in the union.

The far-sightedness of such a policy must now be clear to all. If the vital forces born of war are to be controlled to the greatest public good, only those duly qualified by law should be permitted to have a guiding hand in their development.

To work out solutions for the problems arising from the harnessing of these new energies, many engineers will be needed. This circumstance indicates a rather full employment program ahead for the Engineering Profession. However bright this outlook, it should serve but to increase the Profession's vigilance in seeking out those who attempt to practice engineering without legal licenses. Such watchfulness on our part is essential, not only for our own preservation, but for the proper discharge of our ethical obligation to the public.

As a practical example of this necessity, let us consider for a moment, the atomic bomb. In our endeavors to restrain atomic energy, the most tragic results might well occur if its handling were placed under the jurisdiction of those not properly qualified and restrained by legal processes.

Equally dangerous, but in a less spectacular way, is the plastics field. During the war, numerous plastics formulations were developed as substitutes for other materials. Many of these have rendered splendid services and may indeed take a permanent post-war place as staple materials. However, the engineer cannot accept these on their face value . . . particularly where strength of members in a structure is involved. By exacting tests and painstaking experimentation, he must learn to evaluate and fit them into their proper brackets as materials whose strength and durability are unquestioned for each specific use. Then too, he must be ever wary of the pre-war type, high-pressure salesman who glibly promises an eternity of wear with each order.

Obviously, none but the conscientious, fully qualified, truly professional engineer is equipped to undertake these tasks. And it should be our prime obligation in the years ahead to see to it that such vitally technical work be placed only in his legally licensed hands.

Now that Fall is here once more, we look forward to a resumption of our activities in the National and State Societies with their numerous County Chapters. But this year our objective is even more clear-cut than ever. It calls for engineer-worthy courage and foresight . . . nonstoppable effort . . . dissatisfied determination . . . on the part of each one of us to hold the standards high . . . and higher! . . . from coast to coast. It means ever-growing watchfulness in the local chapters for unlawfully practicing engineers. And in the National and State Societies it demands straight, clear, right thinking . . . straight direct, decisive action . . . about legislation that may tend to lower the requirements for practicing in the Engineering Profession.

We are recognized as the professional builders of the world. But we cannot hope to build a better one unless we ourselves are stronger, braver, tougher, *better* than we've ever been before!

Let's get busy!

ACTIVITIES

By CARL L. SVENSEN

Secretary Texas Board of Registration for Professional Engineers

It has been said that "the proper study of mankind is man."

The much desired professional trend in the various State and Chapter activities has been developing during recent times. The proper study of chapter activities would, therefore, appear to be the Chapters of the National Society of Professional Engineers. With this end in view the cooperation of all State Societies and Local Chapters is sought that all may benefit by the activities of the others.

The broad outline of Chapter Activities is suggested by certain committees which are enumerated in the By-Laws of the National Society which specifies the duties of these Committees. These include legislative, public relations, publications, educational, and practice and ethics. All of this is set out in the July 1943 American Engineer and should be read by every member of the Society.

The chapter activity which is best known to most members is that of the meeting programs. Some chapters, therefore, find it advantageous to use a certain amount of time to help the members to become familiar with the various activities and to learn the provisions of the registration law.

Both interest and information are factors in Chapter meetings. Some pertinent items are given in the quotation from the Ohio Society Manual. Additional ideas include such subjects as a "Regional Conference" with members from a number of Chapters and if possible from other States, a discussion of "Professionalism," "The Engineer and Publicity," "The Engineer and the Community," "The Engineer and Post-War Planning," "The Engineer and the Junior Engineer," "Relations with other Professions — a Round Table Discussion by a Doctor, a Lawyer, and an Engineer," "The Engineer in Relation to Public Officials," "The Engineer Returning from Service in the Armed Forces," etc.

CARL L. SVENSEN

Born Worcester, Mass.; Education, Tufts Coll., B.S. in M.E. (Honors) 1907, M.E. 1921; Dftsman, Warren, (Mass.) Steam Pump Co. 1902-04; Asst. Engs. Dist. Engrs. Office Am. Steel and Wire Co., Worcester, Mass., 1907-08; Instr. in M.E. Tufts Coll. and Hd. Mach. Constru. Dept. Franklin Union, 1908-13; Dir. Ohio Tech. Night Sch. 1916-23; Made surveys of Mech. Drawing in Teaching in Ohio. Schs., 1919 and in Sch., Coll. and Prof. Engrg. Drawing, Hd. Dept., Texas Tech Coll., 1926-33; Member of Staff S.P.E.E. Summer sch. for Engrg. Teachers, Carnegie Inst. of Technol., 1930; Actg. Registrar Texas Tech Coll., 1933; Appted. mem. Texas State Bd. of Registration for Prof. Engrs., 1937 (V.-Chairman 1937-38), (Chairman 1938-39), Reappt. 1939. Author of Several textbooks. Member N.S.P.E.

An invaluable guide to the development of effective chapter activities is the publication by the State Societies of a "Manual of Chapter Activities." Such a manual was prepared and published by the Ohio Society of Professional Engineers in 1944 and the Committee would especially value copies of manuals or other material from State Societies and Local Chapters over the country. The Ohio Manual is an excellent and valuable work which highlights the important features under each activity in brief numbered paragraphs which are clearly stated.

For example, under the heading of MEETINGS, the following excellent items are listed.

"Every chapter should have a program committee for their meetings. The Vice-President frequently makes a good program chairman. The chairman should have complete charge of the program arrangements. He should submit a plan for the year to the President and Board for discussion.

1. Meetings should be regular.
   a. At least every two months.
   b. Monthly meetings are desirable.
   c. They should start on time.
2. Type.
   a. They should be interesting to as many as possible.
   b. At least one or two a year should be professional.
   c. They should be well publicized in the newspapers and through your own Chapter's publication to non-members.
   d. Different employment groups might well be made responsible for a meeting.
   e. The leading industrial engineers should make good speakers with an interesting message.
   f. The inspection tour of a local industry or interesting establishment makes an attractive meeting.
   g Buffet or Dutch lunches seem to go over quite well.
   h. Dinner meetings have almost replaced other types of meetings.
   i. Some chapters like to have their business meeting after the speaker has finished.
   j. Good talkers frequently go over better than good subjects.
   k. A summer outing is very desirable. (Picnics, golf, inspec-

tion tours and the like are good opportunities for fellowship.)

l. Get ideas from meetings held in other chapters. (See Chapter Activities in Ohio Engineer.)"

Chapter activities are but a reflection of the individual member's activities, and are based upon interest, understanding and/or professional consciousness. The progress of professional engineering will be measured by the character and amount of the activities of the professional engineers. These activities are a responsibility of the individual. The professional engineer must be capable of responding to obligations otherwise he would not be an engineer. Knowing what responsibility means and being capable of responding to its obligations, however, are of little value unless something is done about it. The challenge must be accepted and acted upon. There is the responsibility for the engineers to educate the public as to the real meaning of professional engineering. There is the responsibility for the engineers to educate that large group of technicians, technical workers, and the like as to the importance of their work and its relation to professional engineering. There is the responsibility for engineers to educate and to clarify the minds of those in authority in the political divisions as to the meaning of professional engineering and its importance in relation to public safety and economy and to promote cooperation of efforts.

On the technical side, there is the general acceptance of the responsibility of engineers in the past. They have been expected to accept responsibility and have been trusted. While this is admirable in principle, and flattering, it has certain dangerous drawbacks now that registration has given the profession of engineering a legal status. The word engineer has taken on a new and tempting value. There have been many to seek the prestige which comes with professional recognition, many honestly believing that they are qualified and perhaps some to whom we may hesitate to imply ulterior motives. However, we know the old saying that "A good name is more to be desired than great riches." It is, then, a responsibility of the registered engineer to protect and promote the good name and the proper meaning of engineering — not alone in the technical sphere but in the greatly enhanced professional sphere — the sphere which has the responsibility for the legal, moral, ethical, and qualification elements of professional engineering.

Responsibility as suggested is an important element of the activities of the individual professional engineer as well as of the Chapters and of the State Societies and of the National Society.

In the field of educational activity there is much to be done. Every high school should be made acquainted with the existence of the Society of Professional Engineers and its purposes. Through the Society and its members information should be furnished about engineering registration and what it means. Boys who plan to become engineers should be told the meaning of engineering and what is involved in its practice. They should be informed of the necessary educational and experience preparations. The choice of an engineering college, the meaning of E.C.P.D. (Engineering Council for Professional Development) accredited courses and the value of a degree in such a course, should all be explained to the boys, their parents and the principal.

Of course it is necessary for the Chapter and the Members to become informed in order to give such important advice. First they should study and understand the provisions of their own State Registration Act. The functions of the E.C.P.D. and how engineering courses are accredited should be fully understood. Information can be obtained by writing to the Engineering Council for Professional Development, 25-33 West 39th Street, New York 18, N. Y.

Engineering registration and the profession of engineering should be subjects for instruction in every engineering college. This is an activity which is the proper concern of all professional engineers in cooperation with the engineering professors. The booklet "Engineering as a Career" published by the E.C.P.D. should be obtained and studied as well as other publications of the Council such as "Faith of the Engineer," framed copies of which might well find a place in every school and college.

Engineering has developed from the individual and technical aspects of its requirements. Ethics and professional practice have been largely a matter of conscience. The technical societies have, it is true, been of great value in developing group consciousness in the various fields of engineering, but with engineering registration and the legal status of the unity of professional engineering, the fences must be taken down between the various fields of enginering to permit the proper functioning of a single united profession. This is one of the activities which belongs to the Society of Professional Engineers. A society however is only a collection of individuals so the familiar old story should be kept in mind about the links in the chain and their effect on the strength of the whole chain.

The Doctors and the Lawyers were either very smart or very fortunate or both — for they each have one basic educational degree and one national society. It would appear to be the best way to make real the unity of engineering as a profession if all registered engineers could be affiliated with one inclusive society — The National Society of Professional Engineers, as the doctors belong to the American Medical Society and the lawyers to the American Bar Association. There is one profession of medicine even though it has many fields of practice. It would appear to be one way to help unify engineering as a profession if one basic identifying degree could be given in engineering. Some schools have done this with the degree of B. E., or bachelor of engineering. Most engineering registration laws do not specifically mention the branches of engineering but provide for a certificate of registration as a Professional Engineer.

The whole matter of unifying the profession of engineering is a major activity of the National Society of all the Members.

In the matter of publicity it would appear that the engineers could take a cue from the architects who never fail to indicate their membership in the American Institute of Architects (A.I.A.), on letterheads, in connection with published articles, and wher-

ever their name appears as well as in any personal data or when introduced as a speaker before any public gathering. Such a practice could well be followed by professional engineers by considering the mention of membership in the National Society of Professional Engineers as necessary and qualifying information. In the course of time the public would come to expect a professional engineer to be a member of the National Society just as a doctor is expected to be a member of the American Medical Association or the lawyer a member of the American Bar Association.

An activity which may appear to be of minor consequence but nevertheless is receiving attention and which can have far reaching effects in public relations is that of identifying the registered professional engineer. For a time this took the form of using the title "Engineer" before the names of registered professional engineers as a form of address and on printed matter. While such a title is accepted practice in South America and in some parts of Europe, it has made little progress in the United States and the present tendency is to discard this practice.

An alternate method of identification which appears to have much to commend it is the simple one of using the letters R.P.E. or R.E. after the name on letterheads, envelopes, programs, articles, and wherever the name appears in print. This is the style of most doctors who follow their names with M. D. It would seem to be desirable to consider some uniform method of identification which would be consistent with the professional status of the engineer.

An individual activity of importance has to do with the proper use of the seal. By its use the public will learn to accept only those engineering recommendations and plans which are presented by registered men and the protective features of engineering registration will be realized. The seal should be used on all official documents and plans. Cases have come to attention where engineers have been asked to affix their seal to plans made by others, where a seal impression has been sought with the naive explanation that it was wanted in order to get a building permit, etc. The answer to the question of a seal on a set of plans was that they had a seal but investigation showed that it was a corporation seal faintly impressed! The name and serial number should always be clearly shown. In another case where responsibility was involved investigation brought out the fact that the plans were prepared, the seal affixed and then the original tracings were turned loose, only to have changes made and new prints prepared. The moral of this activity should be evident!

An activity which is proving its value is that of State Society and Chapter publications. A number of State Societies now publish excellent magazines which are growing in interest as editorial experience is gained. Our National Society magazine "The American Engineer" has shown a constantly developing improvement with the growth in membership. All of this promotes unity and understanding.

There is the activity which concerns enforcement of the registration laws. Questions of enforcement of the law and prosecution of violators are raised over and over. The success of any law depends upon "Need and Knowledge" — need of the provisions of the law and knowledge of the provisions of the law. Engineering registration is no different from anything else in this respect. The mere passing of a law is no guarantee that it will be respected and enforced. There must be "need and knowledge." To disseminate knowledge of a law takes time and effort and this dissemination must be done by those who are most familiar with the need for the law and with the provisions of the law. All of this leads up to placing the responsibility for knowledge of the law, and for its enforcement on those who have been granted a legal status as practitioners of the profession of engineering. Observance of the law will be what they make it through the examples of individual practice, dissemination of knowledge of the registration laws to the public, and the respect which is brought about by the strength and representative character of their activities in their professional association in the National Society of Professional Engineers.

With end of the "Duration" there will now be the important matter of employment conditions to consider. This will be especially important in the cases of young engineers who have had their engineering experience interrupted. Every effort should be made to contact, to aid, and to place them so that they may resume such experience as will promote their professional advancement and be "satisfactory to the Board of Registration" to which they will later apply.

There is one immediate activity which is urged upon all and that is the active cooperation of everyone in sending accounts of the activities of State Societies and Local Chapters to the Committee on Chaper Activities of the National Society. The report of greatest value to professional engineering is the one based upon the methods which have been tested by use. Please let the Committee know what your Chapter has done, how it was done, and how effective the results have been. Your professional cooperation is sought NOW.

IT'S NOT ALWAYS EASY —
To smile
To forget
To forgive
To apologize
To be careful
To take advice
To keep silent
To be unselfish
To be courteous
To keep out of jail
To hold your temper
To use good judgment
To profit by mistakes
To live up to the rules
To admit your mistakes
To pay your bills promptly
To shoulder a deserved burden
— BUT IT'S ALWAYS BEST

Whenever an intelligent man undertakes anything new, whether gardening, cooking, cabinet-making, or chicken raising, his first move should be to supply himself with printed information on the subject.

Civic Responsibilities of Engineers

A report prepared by a joint subcommittee on civic affairs of the A I E E Technical Program and Sections committees

Reprinted by permission of the Committee Chairman, P. L. Alger and the American Institute of Electrical Engineers.

The engineer, by virtue of his professional standing, has important civic responsibilities, beyond those of the ordinary citizen. For example:

1. Engineering has transformed our ways of living, providing modern conveniences, mechanizing industry, and annihilating distance. These changes have required that vast numbers of people perform highly specialized tasks, making their livelihoods depend on the continued smooth working of both industry and government. Furthermore, with the advance in civilized living, any interruption of public service by wars, depressions, or other disorders, produces a vastly greater human distress.

Therefore, the engineer has an obligation to go beyond his specialized tasks, and do whatever he can to have the best use made of technical knowledge, for the public benefit. The public recognizes the engineer as the agent of economic changes, and looks to him for a remedy whenever technical knowledge is misused, or technical services fail to function.

2. The engineer's training teaches honesty, since he learns that nature cannot be deceived. Also, his experience should develop a co-operative spirit, since engineering projects require that many specialists work in harmony. Thus, the engineer should be thrice fitted to be an instrument of public service, by his technical skill, his adherence to facts, and his experience in organized teamwork.

Professional ethics require that these special abilities be applied for the benefit of the community in which the engineer lives, for the principle of the income tax, whereby the rich give more to the public revenue than the poor, is generally accepted. The same principle suggests that the man with special knowledge or ability has greater civic responsibilities than others.

3. The continuing benefits that will arise from further technical progress, in improving the standard of living, conservation of natural resources, and promoting good will at home and abroad, are dependent on better public understanding of technical problems.

The engineer, therefore, has a responsibility for improving technical education and for aiding the public to understand matters of importance to the community.

PUBLIC RELATIONS

The civic actions of engineers may, among other things, consist in:

1. Suggesting that a technical project be considered by the proper authorities.
2. Studying or expounding reports on a project to aid in broadcasting public understanding of its technical aspects.
3. Recommending individuals qualified for specific appointments; or the employment of competent engineering firms to undertake specific tasks.
4. Educational programs.

Naturally, such recommendations have more value if they express the considered thought of a group, or of a selected expert, rather than the views of a self-appointed critic. An individual may act in a small town, however, with the same effect as a committee in a city, or a section of a national engineering society in a greater area. In any case, the final action is taken by an individual, who is responsible for its technical soundness.

The simplest way to be useful in public affairs is to co-operate with the local planning authorities. If there is no city, county, or regional planning commission in existence, an engineer properly may recommend to the public officials that such a commission be formed. If a planning commission exists but is inactive, it is appropriate to recommend some change in the existing law, or the appointment of additional qualified members, that will assist the commission to function effectively.

It is important also that local industry and business have active planning bodies. An engineering society properly may make recommendations to the officials of such groups as the chamber of commerce with even greater force than to public authorities.

When a capable planning commission exists, the chairman may be invited to present to the engineers a resume of their projects in hand or objectives in view, and the engineers in turn may suggest additional projects for study.

When a project is proposed, individual engineers or committees may study the subject and give the planning commission their suggestions in regard to it, or the employment of qualified engineers to make formal recomendations may be suggested.

When a project is finally decided on by the commission, well-informed engineers may be helpful by addressing civic groups on the technical aspects of the proposal, or otherwise aiding the public to appreciate the questions at issue.

The legal, financial, and political aspects of any public question are often more important than the technical aspects, or harder to decide. The purely technical engineer cannot speak with authority in such matters. To be helpful, he must analyze and present

The subcommittee which presented this report was formed by joint action of the technical program and Sections committees in April 1944, and was discharged after completing this assignment in December 1944. Personnel of the committee: P. L. Alger, *chairman:* H. W. Bibber, O. C. Brill, M. D. Hooven, A. C. Muir, and C. S. Purnell.

facts, not advocate. His role is that of the expert witness. There are, however, a few engineers with sufficient judgment and breadth of experience to make over-all decisions, and these may be brought in for counsel when the need arises.

To be sure, the engineer is also a citizen, and so has a right to express his opinion on any public matter, but his preference counts no more than that of any other voter. If he allows his personal bias or his self-interest to enter into his factual reports, his testimony is discredited.

INDIVIDUAL RESPONSIBILITY

The practice of professional engineering, which includes all engineering services to the public, is restricted in most states to registered engineers who have met the requirements of state law. Also, no engineer properly can make a report on which official action is to be taken without accepting full responsibility as an individual.

One principle of success in public relations, therefore, is that any factual reports on public affairs made under the auspices of an engineering society be the responsibility of individual engineers, rather than of the society as a whole. The group may suggest the project, and aid in finding a qualified engineer who will undertake the work. It is his responsibility to perform it in strict accordance with the engineer's code of ethics. The report itself should stand or fall on its own merit. The society, however, may support the conclusions by publishing endorsements of qualified technical committees or by formal organizaional approval after due consideration.

In expressing their opinions on any subject, the officers of a national-engineering-society section, or committee, should speak as individuals delegated by their associates to give their views. They should not state or imply that the full membership of their organization supports these views, because it is imposible for the entire membership to assimilate any one technical subject, even if they were qualified to do so.

THE ENGINEERING METHOD

On the wall of the library in the Engineering Societies Building in New York, N. Y., is this definition:

ENGINEERING: The art of organizing men, and of directing and controlling the forces and materials of nature for the benefit of the human race."

Most engineers, while technically expert in a particular field, are not skilled in the art of organizing men, nor can they foretell any better than other men what actions will most benefit people in years to come.

The engineer, however, has a particular virtue besides his technical skill, and that is his training in the engineering method. This method consists in experimenting, observing, and keeping an open mind, so that every proposal will be thoroughly tested before acceptance. Rather than accepting established methods or arbitrary statements, the engineer devises tests to check them.

In the field of human relations, this engineering method requires the democratic spirit of seeking advice from whoever can give it, and continually modifying ideas in the light of experience.

Perhaps the greatest contribution engineers can make in civic affairs is to apply the engineering method of analysis, substituting facts for opinions, and gaining decisions by tests rather than debate. The engineer should seek to impart this method to others, so that they may become more self-reliant, rather than to attempt himself to solve problems beyond his experience. In this way, the engineer will still be "sticking to his last," even though he enters the broad field of civic affairs.

CO-OPERATIVE ACTIVITIES

It is evident from this review that close co-operation between the many types of engineering specialists and the public authorities is desirable in these civic activities. Engineers are specialists, so that only by working co-operatively can they cover the wide range of technical problems that affect the public welfare.

Civic responsibilities are shared in some degree by all men of professional standing. The medical and legal professions have long recognized this, and by organizing co-operatively in county associations have been able to perform creditably many civic tasks. Public officials habitually look to these associations for guidance in the fields of public health and law. Similarly, business men have organized chambers of commerce for co-operative civic actions. Following this trend also, the National Society of Professional Engineers has gained wide recognition as a leader in the organization of engineering talent for public service.

It is, therefore, logical for the engineers resident in any community to form committees, or join forces with other groups to perform these civic duties. How engineers should organize co-operatively in a given community has been discussed on numerous occasions, and trials have been made of many different procedures. This experience was reviewed at an AIEE conference in St. Louis, Mo., in October 1941, and again in New York, N. Y. in January 1942.

CO-OPERATION IN PRACTICE

The general opinion at these conferences, and in discussion elsewhere, has been that co-operation may well be organized through the formation of a local engineering council, or club, or society, composed of representatives of the local chapters of the national engineering societies and other local technical organizations. In this way, the experience of the existing national organizations will be utilized, and the participation of all engineers in the community will be secured.

Based on the reports presented by representatives of active engineering councils of this type and on the discussions at the conferences just mentions, specific recommendations in regard to the organization, functioning, and activities of a local engineering council were presented by F. A. Cowan, as recorded in *Electrical Engineering* for March 1942, pages 148-9.

In conclusion, engineering results are achieved first by specialized knowledge, and second by organized co-operation. The engineer gains some specialized knowledge in college, and extends it through his daily work, but the organizing skill required for effective co-operation in civic affairs is only learned through years of experience.

It is hoped that the suggestions in this report will inspire engineers to give thought to this important subject, and that they will aid them to be more useful in public affairs.

Law Governing the Practice of Professional Engineering and Surveying in Georgia

SECTION 1

That the said Act approved March 31, 1937 (Acts 1937, pp. 294-310) "entitled an Act to regulate the practice of all branches of professional engineering, including that branch of engineering commonly known as surveying; creating a State Board of Registration for Professional Engineers and Surveyors; defining its powers and duties, etc.," which said Act is now codified by Annotators of Code in the 1943 Cumulative Supplement to the Code of 1933 as Chapter 84-21 beginning with Section 84-2101 and running through Section 84-2157, inclusive; be and the same is hereby repealed in its entirety.

SECTION 2

That in order to safeguard life, health, and property, and to promote the public welfare, any person in either public or private capacity practicing or offering to practice, professional engineering or land surveying, shall hereafter be required to submit evidence that he is qualified so to practice and shall be registered as hereinafter provided.

SECTION 3

That it shall be unlawful for any person to practice or to offer to practice in this State, professional engineering or land surveying, as defined in the provisions of this Act, or to use in connection with his name or otherwise assume, use or advertise any title or description tending to convey the impression that he is a Professional Engineer or Land Surveyor, unless such person has been duly registered under the provisions of this Act.

SECTION 4

The term "Professional Engineer" as used in this Act, shall mean a person who is qualified by reason of his knowledge of mathematics, the physical sciences, and the principles by which mechanical properties of matter are made useful to man in structures and machines, acquired by professional education and practical experience, to engage in the practice of engineering as hereinafter defined.

The term "Engineering" as used in this Act shall mean the practice of the art and science by which mechanical properties of matter are made useful to man in structures and machines, and shall include any professional service, such as consultation, investigation, evaluation, planning, designing, or responsible supervision of construction or operation, in connection with any public or private utilities, structures, buildings, machines, equipment, processes, works or projects, wherein the public welfare, or the safeguarding of life, health or property is concerned or involved, when such professional service requires the application of civil, electrical, chemical or mechanical engineering principles and data and training in the application of mathematical and physical sciences. A person shall be construed to practice or offer to practice professional engineering, within the meaning of this Act, who by verbal claim, sign, advertisement, letterhead, card, or in any other way represents or holds himself out as able or qualified to perform, or who does perform any of the services hereinbefore set out. Nothing contained in this Act shall include the work ordinarily performed by persons who operate or maintain machinery or equipment.

The term "Engineer-in-Training" as used in this Act shall mean a candidate for registration as a professional engineer who is

(a) A graduate in an approved engineering curriculum of four years or more from a school or college approved by the Board as of satisfactory standing; or

(b) Who has had four years or more of experience in engineering work of a character satisfactory to the Board, and who, in addition, has successfully passed the examination in the fundamental engineering subjects prior to completion of the requisite years of experience in engineering work.

(c) Who shall have received from the Board, as hereinafter defined, a certificate stating that he has successfully passed this portion of the examinations as provided in Section 24 of this Act.

The term "Land Surveyor" as used in this Act shall mean a person who engages in the practice of land surveying as hereinafter defined.

The practice of land surveying within the meaning and intent of this Act includes surveying of areas of the earth surface for their correct determination and description and for conveyancing, and recording, or for the establishment or re-establishment of land boundaries and the plotting of land and subdivisions thereof.

The term "Board" as used in this Act shall mean the State Board of Registration for Professional Engineers and Land Surveyors, provided for by this Act.

SECTION 5

A State Board of Registration for Professional Engineers and Land Surveyors is hereby created whose duty it shall be to administer the provisions of this Act. The Board shall consist of four Professional Engineers and one Land Surveyor, who shall be appointed by the Governor from among nominees recommended by the representative engineering societies in the State and shall have the qualifications required by Section 6 of this Act. The members of the State Board of Registration for Professional Engineers

and Surveyors, now in office, appointed under authority of Section 3 of Acts of 1937 (1943 Cumulative Supplement, Code of 1933, Section 84-2104) shall constitute the first Board under this Act, and shall continue in office for the remainder of their respective unexpired terms, and until their successors are appointed and qualified, as members of State Board of Registration for Professional Engineers and Land Surveyors herein created.

On the expiration of term of any member, the Governor shall in the manner hereinbefore provided appoint for a term of five years a registered Professional Engineer, having the qualifications required by Section 6 of this Act, to take the place of the member whose term of said Board is about to expire. Each member shall hold office until the expiration of the term for which such member is appointed or until a successor shall have been duly appointed and shall have qualified.

Every member of the Board shall receive a certificate of his appointment from the Governor. Each member of the Board first appointed hereunder shall receive a certificate of registration under this Act from said Board.

SECTION 6

That each member of the Board shall be a citizen of the United States and a resident of this State, and shall have been engaged in the practice of the profession of engineering for at least twelve years, and shall have been in responsible charge of important engineering work for at least five years. Responsible charge of engineering teaching may be construed as responsible charge of important engineering work.

SECTION 7

That each member of the Board shall receive the sum of $10 per diem when actually attending to the work of the Board or of any of its committees and for the time spent in necessary travel; and in addition thereto; shall be reimbursed for actual traveling, hotel, and other expenses necessarily incurred in carrying out the provision of this Act.

SECTION 8

That the Governor may remove any member of the Board for misconduct, incompetency, neglect of duty or for any other sufficient and just cause. Vacancies in the membership of the Board shall be filled for the unexpired term by appointment by the Governor as provided in Section 5 of this Act.

SECTION 9

That the Board shall hold a meeting within 30 days after its members are first appointed, and thereafter shall hold at least one regular meeting each year. Special meeting shall be held at such time as the by-laws of the Board may provide. The Board shall elect or appoint annually from their members, the following officers: A Chairman, a vice Chairman. A quorum of the Board shall consist of not less than three members.

SECTION 10

That the Secretary of the Board shall keep a true and complete record of all proceedings of the Board, and may employ such clerical assistance as the Board may deem necessary.

SECTION 11

That the Board shall adopt all necessary rules, regulations, and by-laws not inconsistent with this Act and the Constitution and laws of this State or of the United States, to govern its times and places of meetings for organization and reorganization, for the holding of examinations, for fixing the length of terms of its officers, and for governing all other matters requisite to the exercise of its powers, the performance of its duties, and the transaction of its business under the provisions of this Act.

The Board shall adopt and have an official seal, which shall be affixed to all certificates granted.

SECTION 12

In carrying into effect the provisions of this Act, the Board may, under the hand of is chairman and the seal of the Board, subpoena witnesses and compel their attendance, and also may require the production of books, papers, documents, etc., in a case involving the revocation of registration or practicing for offering to practice without registration. Any member of the Board may administer oaths or affirmations to witnesses appearing before the Board.

If any person shall refuse to obey any subpoena so issued, or shall refuse to testify or to produce any books, papers, documents, the Board may present its petition to any court of competent jurisdiction, setting forth the facts, and thereupon such court shall, in a proper case, issue its subpoena to such person, requiring his attendance before such court and there to testify or to produce such books, papers, and documents, as may be deemed necessary and pertinent by the Board. Any person failing or refusing to obey the subpoena or order of said court may be proceeded against in the manner as for refusal to obey any other subpoena or order of the court.

SECTION 13

The Secretary of the Board shall receive and account for all moneys derived under the provisions of this Act, and shall pay the same monthly to the State Treasurer.

SECTION 14

The Board shall keep all records of its proceedings and a register of all applications for registration, which register shall show:

(a) the name, age and residence of each applicant;

(b) the date of application;

(c) the place of business of such applicant;

(d) his education, experience, references and other qualifications;

(e) whether or not an examination was required;

(f) whether the applicant was rejected;

(g) whether a certificate of registration was granted;

(h) the date of the action of the Board; and

(i) such other information as may be deemed necessary by the Board.

The records of the Board shall be prima facie evidence of the proceedings of the Board set forth therein, and a transcript thereof, duly certified by Secretary of the Board under seal, shall be admissable in evidence with the same force and effect as if the original were produced.

SECTION 15

That annually, as of January 1, the Board shall submit to the Governor a report of its transactions of the preceding year, and shall also transmit to him a complete statement of the receipts and expenditures of the Board, attested by affidavits of its chairman, a copy of which shall be filed with the Secretary of State.

SECTION 16

That a roster showing names and places of business of all registered Professional Engineers and all registered Land Surveyors shall be prepared by the Secretary of the Board during the month of January each year, commencing one year from the date of this Act becoming effective. Copies of this roster shall be mailed to each person so registered, and placed on file with the Secretary of State. Copies of this report to be made available to any person upon request.

SECTION 17

That upon passage of this Act all registrations previously issued under prior authority of the Board and which have not expired or have not been revoked shall remain in full force and effect the same as if issued under the provisions of this Act. In those cases where Certificates of Registration have previously been issued authorizing the practice of "Surveying" the Board shall issue, without charge, to each such registrant, upon surrender of the original certificate, a new certificate, properly inscribed and authorizing the practice of "land surveying."

That any time within 18 months after this Act becomes effective, upon due application therefor and the payment of the registration fee of $15 for Professional Engineers, or $10 for Land Surveyors, the Board shall issue a certificate of registration, without oral or written examination, to any Professional Engineer or Land Surveyor, who was exempt from registration under Act of 1937 and is now required, by this Act, to register, when such applicant shall submit evidence under oath, satisfactory to the Board, that he is of good character, has been a resident of the State of Georgia for at least one year immediately preceding the date of his application and is and has been practicing professional engineering or land surveying, at the time this Act became effective or has had previous practice and responsible charge of work of a character satisfactory to the Board. After this Act shall have been in effect 18 months, the Board shall issue certificates of registration only as provided for in Sections 18, 19, 20, 21 and 34 of this Act.

SECTION 18

That the following shall be considered as minimum evidence satisfactory to the Board that the applicant is qualified for registration as a Professional Engineer.

(a) Graduation in an approved engineering curriculum of four academic years or more from a school or college approved by the Board as of satisfactory standing; and a specific record of an additional four years or more of experience in engineering work of a character satisfactory to the Board, and indicating that the applicant is competent to pracice professional engineering. (In counting years of experience, the Board at its discretion may give credit not in excess of one year, for satisfactory graduate study in engineering), provided that in a case where evidence presented in the application does not appear to the Board conclusive nor warranting the issuing of a certificate of registration, the applicant may be required to present further evidence for the consideration of the Board, and may also be required to pass an oral or written examination, or both, as the Board may determine; or

(b) Successfully passing a written, or written and oral, examination designed to show knowledge and skill approximating that attained through graduation in an approved academic four years engineering curriculum and a specific record of eight years or more of experience in engineering work of a character satisfactory to the Board and indicating that the applicant is competent to practice professional engineering; or

(c) A specific record of twelve years or more of actual practice in professional engineering work of a character satisfactory to the Board and indicating that the applicant is qualified to design or to supervise construction of engineering work and provided applicant is not less than 35 years of age.

SECTION 19

That the following shall be considered as minimum evidence to the Board that the applicant is qualified for registration as Land Surveyor.

(a) Graduation from a school or college approved by the Board as of satisfactory standing, including the completion of an approved course in surveying; and an additional two years or more of experience in land surveying work of a character satisfactory to the Board and indicating that the applicant is competent to practice land surveying; or

(b) Successfully passing a written, or written and oral, examination in surveying prescribed by the Board; and a specific record of six years or more of experience in land surveying work of a character satisfactory to the Board and indicating that the applicant is competent to practice land surveying. The required six years of experience shall become effective two years after passage of this Act, prior to that time four years required.

(c) A specific record of ten years or more of actual practice in land surveying work of a character satisfactory to the Board and provided applicant is not less than 30 years of age.

SECTION 20

No person shall be eligible for registration as a Professional Engineer, or Land Surveyor, who is not of good character and reputation.

In considering the qualifications of applicants, said applicant shall be at least 25 years of age. Responsible charge of engineering teaching may be construed as responsible charge of engineering work. The satisfactory completion of each academic year of an approved course in engineering in a school or college approved by the Board as of satisfactory standing, without graduation, shall be considered as equivalent to a year of active practice. Graduation in a course other than engineering from a college or university of recognized standing shall be considered as equivalent to two years of active practice; Provided, however, that no applicant shall receive credit for more than four years of active practice because of educational qualifications. The mere execution, as a contractor, of work designed by a Professional Engineer, or the supervision of the construction of such work as foreman or superintendent shall not be deemed to be active practice in engineering work; unless such work involves engineering practices, or the applicant present evidence of additional engineering practice of a character satisfactory to the Board and indicating that the applicant is competent to be placed in responsible charge of engineering work.

SECTION 21

That any person having the necessary qualifications prescribed in this Act to entitle him to registration shall be eligible for such registration though he may not be practicing his profession at the time of making his application.

Any person residing or having his principal place of practice outside this State and who wishes to be registered in this State must first be registered in the State or territory where he now resides, or has his principal place of practice provided said State has in effect a law governing the practice of Professional Engineering and/or Land Surveying.

SECTION 22

Applications for registration shall be on forms prescribed and furnished by the Board, shall contain statements made under oath, showing the applicant's education and detail summary of his technical work and shall contain not less than five references of whom three or more shall be registered professional engineers having personal knowledge of his engineering experience.

SECTION 23

That the registration fee for Professional Engineers shall be $15 (fifteen dollars), which shall accompany application. If application is rejected $10 (ten dollars) will be refunded to applicant, the remainder being retained as an application fee.

The registration fee for Engineer-in-Training shall be $5 (five dollars), which shall accompany application. This amount shall be credited against the total fee required for registration as a Professional Engineer if the registrant has been certified in Georgia as an Engineer-in-Training.

The registration fee for Land Surveyors shall be $10 (ten dollars), which shall accompany application. If application is rejected $5 (five dollars) will be refunded to applicant, the remainder being retained as an application fee.

SECTION 24

That when oral or written examination are required, they shall be held at such time and place as the Board shall determine.

If examinations are required on fundamental engineering subjects (such as are ordinarily given in college curriculum) the applicant shall be permitted to take this part of the professional examination prior to his completion of the requisite years of experience in engineering work, and satisfactory passage of this portion of the professional examination by the applicant shall constitute a credit for a period of ten years.

The Board shall issue to each applicant upon successfully passing the examination in fundamental engineering subjects a certificate stating that he has passed the examination and that his name has been recorded as an "Engineer-in-Training." Provided that no Engineer-in-Training certificate will be issued in those cases where the applicant successfully passes examinations in fundamental engineering subjects, as well as his advanced specialized engineering work and is granted a license as a Professional Engineer.

The scope of the examinations, in the special branch of engineering in which the applicant proposes to engage and the methods of procedure shall be prescribed by the Board with special reference to the applicant's ability to design and supervise engineering works so as to insure the safety of life, health and property.

Separate examinations shall be given for the purpose of determining the qualifications of applicants for registration in professional engineering and in land surveying.

A candidate failing on examination may apply for re-examination at the expiration of six months and shall be re-examined without payment of additional fee. However, if the re-examination is passed the applicant must pay the remainder of the registration fee. Subsequent examinations will be granted upon payment of a fee to be determined by the Board.

At least two regularly scheduled examinations shall be held annually, in the months of January and July, respectively, and at such times as determined by the Board.

SECTION 25

That the Board shall issue a certificate of registration upon payment of registration fee as provided for in this Act, to any applicant who, in the opinion of the Board, has satisfactorily met all the requirements of this Act. In case of a registered engineer, the certificate shall authorize the practice of "professional engineering," and in the case of a registered land surveyor, the certificate shall authorize the practice of "land surveying." Certificates of registration shall show the full name of the registrant, shall have a serial number, and shall be signed by the Chairman and the Secretary of the Board under the seal of the Board.

The issuance of a certificate of registration by the Board shall be evidence that the person named therein is entitled to all the rights and privileges of a "Registered Professional Engineer," or a "Registered Land Surveyor," while the said certificate remains unrevoked or unexpired.

SECTION 26

That each registrant hereunder shall, upon registration, obtain a seal of the design authorized by the Board, bearing the registrant's name and the legend, "Registered Professional Engineer," or "Registered Land Surveyor." Plans, specifications, plats and reports issued by a registrant shall be stamped with the said seal when filed with public authorities, during the life of the registrant's certificate; but it shall be unlawful for anyone to stamp or seal any documents with said seal after the certificate of the registrant named thereon has expired, or has been revoked, unless said certificate shall have been renewed or reissued. Each seal shall also provide space for stating the certificate number and the date of expiration of the certificate of registration.

SECTION 27

Certificates of registration shall expire on the last day of the month of December following their issuance or renewal and shall become invalid on that date unless renewed. It shall be the duty of the Secretary of the Board to notify every person registered under this Act, of the date of the expiration of his certificate and the amount of the fee that shall be required for its renewal for one year, such notice shall be mailed at least one month in advance of the date of the expiration of said certificate.

SECTION 28

That renewal may be effected at any time during the month of December for a period of one or two years by the payment of a fee of not more than five dollars for Professional Engineers nor more than three dollars for Land

Surveyors for any year, as may be fixed by said Board. The failure on the part of any registrant to renew his certificate upon expiration in the month of December when notified as required above, shall not deprive such person of the right to renewal, but the fee to be paid for the renewal of the certificate if not paid by March first shall be the renewal fee plus an additional fee of four dollars ($4).

Should a registered Professional Engineer or Land Surveyor who has not engaged in the practice of his profession fail and refuse to renew or validate his certificate for a period of five years, in order for such a person to renew his certificate he shall file application therefor and submit himself to such examination as may be determined by the Board and shall pay therefor the sum of fifteen dollars ($15).

SECTION 29

A firm, corporation, copartnership, or an association may engage in the practice of professional engineering or land surveying in the State, provided only such practice is carried on under the direction of Professional Engineers or Land Surveyors respectively, who are registered in this State.

SECTION 30

That on or after the passage and approval of this Act; it shall be unlawful for this State or for any of its political subdivisions, such as a county, city, town, township, or school district to engage in the construction of any public work involving professional engineering, unless the plans and specifications and estimates have been prepared by, and the construction executed under the direct supervision of, a registered Professional Engineer; or Architect; provided, that nothing in this Section shall be held to apply to any public work wherein the expenditure for the complete project of which the work is a part does not exceed $2,000 (two thousand dollars).

SECTION 31

That nothing in this Act shall be construed as excluding a qualified registered Architect from such engineering practice as may be incident to the practice of his profession; or as excluding a Professional Engineer registered under the provisions of this Act, from such architectural practice as may be incident to the practice of professional engineering.

SECTION 32

The following persons shall be exempt from the provisions of this Act, to-wit:

(a) A person not a resident of and having no established place of business of this State, practicing or offering to practice herein the profession of engineering or land surveying, when such practice does not exceed in the aggregate more than 60 days in any calendar year; provided, such person is legally qualified by registration to practice the said profession in his own State or Country in which the requirements and qualifications for obtaining a certificate of registration are not lower than those specified in this Act.

(b) A person not a resident of and having no established place of business in this State, or who has recently become a resident thereof, practicing or offering to practice herein for more than 60 days in any calendar year the profession of engineering or land surveying, if he shall have filed with the Board an application for a certificate of registration and shall have paid the fee required by this Act, and provided that such a person is legally qualified to practice said profession in his own State or Country in which the requirements and qualifications for obtaining a certificate of registration are not lower than those specified in this Act. Such exemptions shall continue only for such time as the Board requires for the consideration of the application for registration.

(c) A person working as an employee or a subordinate of a person holding a certificate of registration under this Act, or an employee of a person practicing lawfully under paragraphs (a) and (b) of this Section, provided such work does not include final design decisions and is done under the responsibility of a person holding a certificate of registration under this Act or a person practicing lawfully under paragraphs (a) or (b) of this Section.

(d) Officers and employees of the government of the United States while engaged within this State in the practice of profession engineering or surveying, for said government.

(e) All elective officers of the political subdivision of the State while in the practice of professional engineering or land surveying in the performance of their official duties.

(f) Nothing in this Act shall be construed as requiring registration for the purpose of practicing professional engineering or land surveying by an individual, firm, or corporation on property owned or leased by said individual, firm or corporation unless the same involves the public safety or public health; or for the performance of engineering which relates solely to the design or fabrication of manufactured products.

SECTION 33

The Board may upon application therefor, and the payment of a fee of $15 (fifteen dollars), issue a certificate of registration as a Professional Engineer or Land Surveyor to any person who holds a certificate of qualification or registration issued to him by proper authority of the National Council of State Board of Engineering Examiners, or of the National Bureau of Engineering Registration, or of any State or Territory or possession of the United States, or any Country; provided that the requirements of the registration of Professional Engineers or Land Surveyors under which said certificate of qualification or registration was issued do not conflict with the provisions of this Act and are of a standard not lower than that specified in Sections 18, 19, 20 and 21, inclusive.

SECTION 34

The Board shall have the power to revoke the certificate of registration of any registrant who is found guilty of:

(a) The practice of any fraud or deceit in obtaining a certificate of registration.

(b) Any gross negligence, incompetence, fraudulent act of misconduct in the practice of professional engineering or surveying as a registered Professional Engineer or Land Surveyor.

SECTION 35

Any person may prefer charges of fraud, deceit, gross negligence, incompetency or misconduct against any registrant. Such charges shall be in writing, and shall be sworn to by the person making them and shall be filed with the Secretary of the Board.

(*Continued on page 32*)

Report of the Nominating Committee of the N.S.P.E.

The Nominating Committee hereby respectfully presents its Nominees for officers of the National Society of Professional Engineers for the year of 1946.

For President
RITCHIE LAWRIE, JR.
of Pennsylvania

Ritchie Lawrie, Jr., was born on October 7, 1890 in Edinburgh, Scotland. He received his B. S. Degree in Civil Engineering in 1911 at the Carnegie Institute of Technology. He served in World War I as a First Lieutenant in the Ordnance Corps of the U. S. Army.

Mr. Lawrie has from 1922 to the present time been a partner in the firm of Lawrie & Green of Harrisburg, Pennsylvania, engaging in the engineering and architectural design of structures. Between December 1941 and January 1945 he served also as District Manager of the War Production Board in Harrisburg, Pennsylvania. He is President of the Whittaker-Diehl Company, Harrisburg, Pennsylvania, and a Director of the Central Trust Company and the Harrisburg Gas Company of Harrisburg, Pennsylvania, and of the Brubaker Mfg. Company of Millersburg, Pennsylvania.

He is at present Vice-President of the National Society of Professional Engineers from its Northeastern Area and is Past-President of the Pennsylvania Society of Professional Engineers. He is the Treasurer of the National Society for Crippled Children and President of the Pennsylvania Society for Crippled Children.

Mr. Lawrie is a member of the Harrisburg Rotary Club and in 1933 was District Governor of the 34th District of Rotary International. He is a member of the Harrisburg Chamber of Commerce and a Director of the Pennsylvania State Chamber of Commerce and is also a member of the Harrisburg Country Club.

For Treasurer — LEO H. CLEARY of Washington, D. C.

Leo H. Cleary was born in Waterbury, Connecticut. He received his B. S. Degree in Electrical Engineering in 1916 from the Engineering School of the Catholic University of America.

Mr. Cleary is at the present time a Consulting Engineer with offices in Washington, D. C. He has been intimately connected with the design and layout of numerous electrical lighting and power projects in Washington and elsewhere for both the government and private organizations. This work has progressed continually from 1916 to the present time. In his early experience he was employed by various engineering companies including a three-year period as Assistant Electrical Engineer with the U. S. Navy Department, from which he resigned in 1922 to obtain practical experience in the electrical contracting field. He then supervised the work of scores of electrical installations of many types in many parts of the country. This led to the design and responsible charge of electrical work in the office of George A. Weschler, Consulting Engineer, Washington, D. C., and in 1939 the organization of the firm of Weschler & Cleary, and later the development of his own consulting engineering organization. As a Consulting Engineer he has received considerable recognition and in June of 1943 was awarded the Army and Navy "E" Award for work on the U. S. Signal Corps School Project at Arlington, Virginia.

He is Treasurer of the National Society of Professional Engineers, a position that he has held very ably for the past three years, and he was Vice-President of the National Society of Professional Engineers in 1940. He has served two terms as National Director of N.S.P.E. from the District of Columbia Society of Professional Engineers previous to which he was both Secretary and President of that Society. He is a Fellow of the American Institute of Electrical Engineers, member of the Society of American Military Engineers, member of the District of Columbia Council of Engineering and Architectural Societies, member of the Washington (DC) Society of Engineers, member of the Washington (DC) Building Congress, and has been on numerous committees and boards devoted to the development of the engineering profession.

He is registered as a professional engineer in the states of Connecticut, Pennsylvania, Maryland, Delaware, and Ohio.

For Vice-President, Northeastern Area — JAMES F. FAIRMAN of New York.

James F. Fairman was born on April 8, 1896 at Big Rapids, Michigan. He received his B. S. Degree in Electrical Engineering in 1918 and his M. S. Degree in 1921, both from the University of Michigan. After obtaining a short experience with Westinghouse Electric & Manufacturing Company he returned to the University of Michigan where he taught for a period of six years and became Assistant Professor of Electrical Engineering.

Mr. Fairman is at the present time Assistant Vice-President, Consolidated Edison Company of New York, Inc., which position he has held since December 1940. His association with this Company was preceded by several stages of engineering work with the Brooklyn Edison Company, Inc., where from Engineering Assistant in 1925 he rose to the position of Electrical Engineer with that Company in 1932 and later became Electrical Engineer with the Consolidated Edison Company of New York, Inc., in 1937.

He is Vice-President and Fellow of the American Institute of Electrical Engineers and at one time he represented the A.I.E.E. on the Engineers' Council for Professional Development. He is a Past-President of the New York State Society of Professional

Engineers, and is now on the Board of Directors of the National Society of Professional Engineers.

He is a member of Sigma Xi, Tau Beta Pi, Engineers' Club of New York and the Brooklyn Engineers' Club, and is the author of several papers which were published in the American Engineer and a recent paper entitled "Organization of the Engineering Profession" which was published in Electrical Engineering.

For Vice-President, Central Area — ALEX VAN PRAAG, JR., of Illinois.

Alex Van Praag, Jr. was born on January 29, 1896 at Little Falls, Minnesota. He received his B. S. Degree in Civil Engineering in 1917 from the University of Illinois. He also attended the James Millikin University at Decatur, Illinois and High School at Decatur, Illinois. He served as a First Lieutenant in the U. S. Army in World War I. In 1919 he was Assistant in the office of City Engineer at Decatur, Illinois and in 1920 he was Assistant State Sanitary Engineer of the State of Illinois.

Mr. Van Praag is at present a member of the firm of Warren & Van Praag, Inc., Consulting Engineers, Decatur, Illinois, which association is of 23 years' standing having commenced in 1922. They are consulting engineers for numerous cities and villages in the state of Illinois and in adjoining states, specializing in the design and supervision of construction of municipal public works projects, particularly water supply, sewerage, and light and power plant projects. At various times he has been Special Assistant to the War Production Board, Architect-Engineer for the U. S. War Department in responsible charge of water supply and sewerage facilities of Sangamon Ordnance Plant, and Architect-Engineer for U. S. War Department in responsible charge of engineering construction of Freeman Army Airfield at Seymour, Indiana.

He is a Director of the National Society of Professional Engineers from the state of Illinois and has served in this capacity during the years 1942, 1943, 1944, and 1945. He is a member of the American Society of Civil Engineers, a member of the Illinois Society of Engineers and its President in 1942, a member of the American Water Works Association, and a member of the Central States Sewage Works Association.

He is a member and Past-President of the Decatur, Illinois Lions Club, a member and Past Exalted Ruler of the Decatur Elks Club, member of the Decatur Association of Commerce, and a member of the Decatur Club.

He is registered as a professional engineer in the states of Illinois, Iowa, and Indiana. He is also the author of numerous articles on water supply, sewerage, and light and power for various technical publications.

For Vice-President, Southern Area — STEPHEN C. HALE of Georgia.

Stephen C. Hale was born in 1889 at Lithgow, Dutchess County, New York. He received his degree of Mechanical Engineer in 1912 from Cornell University.

Mr. Hale is at the present time Chief Engineer of the Fulton Bag & Cotton Mills of Atlanta, Georgia with branch plants in six states. He has been continuously engaged in engineering work, plant development, and administrative work of varied character. This experience includes employment with many nationally known concerns such as Cheney Brothers, Ludlow Mfg. Associates, Beech-Nut Packing Company, and International Paper Company. He was Camp Supervisor of the building of U. S. Nitrate Plant No. 2 at Muscle Shoals, Alabama. He is also engaged in the development of his citrus fruit property interests in Florida.

Mr. Hale is President of the Georgia Society of Professional Engineers and is a member of the American Society of Mechanical Engineers as well as the Georgia Engineering Society. He was a member of the Organizing Committee which sponsored the formation of the Georgia Society of Professional Engineers.

He is an honorary member of Pi Tau Sigma, a Past-President of the Kiwanis Club, and a member of the Cornell Society of Engineers. He is quite active in civic affairs, organizing unemployment relief and as a Captain in the Civilian Defense Organization. He is the author of a number of articles on plant organization including one on the "Cooperation of the Textile Industry with the National Defense Program," and has contributed letters regularly to the American Engineer.

For Vice-President, Western Area — WILLIAM L. THRAILKILL of Washington (State).

William Lubrecht Thrailkill was born on June 23, 1902 at Hamilton, Montana. He received his B. S. Degree in Electrical Engineering with high honors at the University of Washington in 1927. After graduating he was an instructor in engineering in the University of Washington during the year 1927.

Mr. Thrailkill is at present the Assistant General Manager and Director of The Washington Water Power Company at Spokane, Washington. His association with this organization commenced in 1933 when he became its Rate Engineer and later was promoted to manager of its Consulting and Research Department. His earlier experience includes work as an Assistant Engineer and Assistant Chief Engineer of the Washington Department of Public Works.

He is serving the National Society of Professional Engineers as Vice-President from the Western Area this year. He is a member of the American Institute of Electrical Engineers, a member of the Associated Engineers of Spokane, a member of Spokane Chamber of Commerce, a member of the National Office Management Association, and a member of the Washington State Reclamation Association.

He is a member of Sigma Xi, Tau Beta Pi, Spokane City Club, Spokane University Club, Spokane Country Club, and is also a member of the Lions Club.

Each Nominee's name has been sent to the Member State Society for ratification and each State Society has ratified the submission of the Nominee's name.

Each Nominee has been requested to accept the nomination and each has accepted in writing.

This report has the unanimous approval of all of the Committee members.

Respectfully submitted,

THE NOMINATING COMMITTEE

Lawrence E. Peterson, Chairman
Colonel Walter L. Simpson
Dean E. A. Holbrook
William C. Kammerer
J. W. Shallenberger.

MEMBER STATE SOCIETIES N.S.P.E — *Officers and Directors*

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WISCONSIN	WILLIAM J. URBAN 3001 West Canal St. Milwaukee 8, Wis.	O. J. MUEGGE 656 Crandall St Madison 5, Wisconsin	L. E. PETERSON 312 E. Wisconsin Ave. Milwaukee, Wisconsin	

Kindly report any errors or omissions to the Editor.

National and State Societies' News

N.S.P.E. LEGISLATIVE COMMITTEE COMMENT

"Eternal Vigilance Is the Price of Freedom"

With this issue of The American Engineer we bring to you a feature we hope to continue, and also hope that it will meet with your approbation. The LEGISLATIVE COMMITTEE COMMENT which will appear each month under this heading, will be an abstract of National, State and Local items — in so far as we can learn of them — that may affect the social and economic welfare of the engineer.

What we print under this heading will be in the form of news, and opinion when stated, will be the writer's personal opinion and does not reflect the policy of the N.S.P.E. unless so authorized and so noted. Such policy is made by the Executive Board and not by the legislative committee.

That it may be full of interest and use, to you our readers, we must of a necessity solicit all of you to join our reportorial staff. However, we do not agree and do not promise to print all copy that is received. We reserve the right to abstract or to reject, as our judgment dictates.

The small, apparenly insignificant item of local happening, affecting the professional engineer adversely, may be the most important (do not confuse Ethics and Practice with legislative unless it has a bearing on the latter). It is the first small crack in the structure which if not repaired in time causes the ultimate failure.

By preference we would like to have you clear your copy through your own state legislative committee Chairman. It you are located adjacent to a state not having a Sate Society will you not act as reporter for them?

Cordially yours,
Ray Fuller, Chairman
Legislative Committee.

Georgia, Illinois and Pennsylvania all have new Registrtaion Acts. Minnesota has just amended their Act. Georgia's and Minnesota's acts are in print and Illinois and Pennsylvania in the process of printing. Copies can be obtained by writing to the various Registration Boards of these states. Shortly we hope to print herein comparisons of some of the more controversial parts of these acts, and possibly the acts in their entirety. Georgia's Act is printed in this issue.

A meeting of the American Society of Civil Engineers — Committee on Registration of Engineers was held in New York on August 28th to discuss proposed amendments to the "Model Law." President Nold of N.S.P.E. appointed John C. Riedel, D. B. Steinman, James F. Fairman and Ray Fuller to represent the National Society at this important conference. Details of he results of this conference will be published at a later date.

BILLS IN CONGRESS

S.366 — 1/22/45 — (O'Daniel) — referred to the Committee on Education and Labor. To amend the National Labor Relations Act. This bill would amend the act by changing the first sentence of Sec. 8 to read, "It shall be an unfair labor practice for an employer, *a labor organization, or an officer, member, or employee of a labor organization, or any other person or persons—*" Section 7 preceding and Section 8 come under the heading of "Rights of Employees." The words in Italics comprise the amendment added.

S.1188 — 6/25/45 — (Green) — referred to Committee on Finance. To amend and extend the provisions of the Social Security Act; etc. This Act may be cited as the "Social Security Act Amendments of 1945." Of interest to engineers is a paragraph from Section 205 (b) which says, "Provided, That services performed by an individual for wages or under any contract of hire shall be deemed to be employment unless and until it is shown that such individual has been and will continue to be free from control or direction over the performance of such services; and such service is either outside the usual course of the business of the enterprise for which such service is performed or that such service is performed outside of all the places of business of the enterprise for which such service is performed; and such individual is customarily engaged in an independently established trade, occupation, profession, or busniess, except —." The exceptions are casual labor; son, daughter, etc.; American vessel; U. S. Government; and in employ of State or political subdivision thereof.

This new paragraph of amendment would seem to further restrict the freedom of the employed professional engineer to accept engagements outside of his regular employment except by each time becoming an employee of rcord.

S.825 — 4/4/45 — (Byrd) — referred to the Committee on Naval Affairs. "To establish a Research Board for National Security to insure the continued preparedness of the Nation along far sighted technical lines by providing for the application of scientific research to national security; to provide a means of utilizing in times of peace as well as war the services of the outstanding scientists of the Nation in planning and executing of military research; and for other purposes."

H.R.2937 — 4/18/45 — (Randolph) — referred to Committee on Interstate and Foreign Commerce. "To provide for the promotion of the welfare of displaced labor in relation to the economic effects flowing from scientific and technological developments."

S.1297 — 7/23/45 — (Kilgore) — referred to the Committee on Military Affairs. "To promote the progress of science and the useful arts, to secure the national defense, to advance the national health and welfare, and for other purposes." In this bill Sec. 902, occurs the following: "The Director shall appoint and fix the compensation of such personnel as he may deem necessary to carry out the provisions of this Act. Such appointment and compensation shall be made in the civil-service laws and regulations and Classification Acts of 1923, as amended, except that, when deemed necessary by the Director for the effective administration of this Act, technical and professional personnel may be employed without regard to such laws."

Also: "Sec. 403. As used in this Act — (a) "Research and development" means not only theoretical analysis, exploration and experimentation, but also the extension of investigative findings and theories into practical application, including the preparation of plans, specifications, and standards for various goods and services, the undertaking of related economic and industrial studies, the experimental production and testing of models, and the building and operation of pilot plants."

S1050 — 4/24/45 — (Wagner) — Referred to the Committee on Finance. "To provide for the national security, health, and public welfare. This Act may be cited as the 'Social Security Amendment of 1945.'"

This act is 185 pages long. Affecting the engineer as a group would be the provisions of it allocating Government funds for the construction of state Hospitals and institutions, because control of the funds is retained in the hands of the Federal Works Agency and the Surgeon General. In one clause, Sec. 621 (f), it mentions " . . . ; including architects fees, legal council and all other expenses incidental to construction, . . . " Engineers fees are not mentioned.

H.R.2946 — 4/1/45 — (May) — referred to Committee on Naval Affairs (Senate).

H.R.3440 — 6/20/45 — referred to Committee on Military Affairs (House) "Authorizing appropriations for a permanent program of scientific research in the interest of National Security."

S.1248 — 7/9/45 — (Fulbright) — referred to Committee on Commerce. "To establish a Bureau of Scientific Research, and for other purposes." (We are always skeptical of "other purposes.")

S.1285 — 7/19/45 — (Magnuson) — referred to the Committee of Commerce.

H.R.3860 — 7/20/45 — (Randolph) — referred to Committee on Interstate and Foreign Commerce. "To promote the progress of science and the useful arts; to secure the national defense; to advance the national health, prosperity and welfare; and for other purposes."

The joint bills also state, "Such appointments and compensation shall be made in accordance with the provisions of the civil-service laws and regulations and Classification Act of 1923, as amended, except that when deemed desirable by the Director, technical and professional personnel may be employed without regard to the provisions of the Classification Act of 1923, as amended.

GEORGIA

The GSPE Broadcaster, the monthly bulletin published by the Georgia Society of Professional Engineers has an item in its August issue which may prove valuable to other chapters and state societies. It is reprinted exactly as it appeared in the Broadcaster:

TRY THIS ON YOUR PROSPECTIVE MEMBER.

Often, in endeavoring to interest a professional engineer in membership in GSPE, the problem resolves itself into one of finding specific advantages and justifications that will appeal to the particular prospect. By talking with new members and learning their reasons for becoming associated with the Society, one can frequently find good "ammunition" to use on other prospects.

The other day I met a prominent engineer who had just become a member of GSPE. Knowing that he had been a particularly "difficult" prospect to sign up, I asked him why he had joined — what was it that had interested him sufficiently to become a member. "Well," he said, "I'm a busy man and I haven't had an opportunity to go into all the details of the Society. I know in a general way what it is and what it stands for. The thing that really influenced me was your membership. When I thumbed through the membership roster in the year book, and saw the names of a considerable number of my friends and associates — men whose judgment I respect, I felt certain that the GSPE must be an organization worthy of my support."

KANSAS

Director Maloy Quinn of the Kansas Society of Professional Engineers was appointed August 3rd to the Kansas Registration Board for Professional Engineers, to complete the term of the late Engineer P. L. Brockway of Wichita who died July 20, 1945.

Engineer Quinn is County Engineer of Clay County and City Engineer of Clay Center, Kansas, and has been very active in professional affairs. He was a member of the Committee on Constitution and Plan of Organization which set up the working organization of KSPE, and was elected Director at the First Annual Meeting of the Society. He has been active in the County Engineer's Association of Kansas, and as President of that organization, had a prominent part in the movement to secure the support of the county engineers for strengthening of the Kansas Registration Law. Forty years of age, Engineer Quinn is the youngest member of the Registration Board, and those who know him predict that he will be one of its most energetic and capable members.

NEW YORK

Westchester County Chapter

The last issue of the Westchester County Chapter Bulletin to reach the editor's desk contains an extract from a recent report by the American Council on Education and the National Re-

search Council which states that the country faces a dangerous shortage of men trained for the professions.

Concerning engineering, it says: "75,000 fewer engineering students are enrolled in the colleges this year than normally. In 1940 the enrollment was 110,000; in 1943-4, 50,000; 1945, 38,000. Of these, 17,000 are freshmen awaiting induction, leaving about 20,000 actual students. Of that number 4,000 are Canadians. A year ago, less than 1% were from Canada."

According to these figures, it would be advisable for many men entering college to seriously consider the advantage of taking the engineering courses.

OHIO

The last issue of the Ohio Engineer contains the following item:

THE CHALLENGE OF THE LAST QUARTER.

"Right now is the time, not next month but right now, to challenge that friend of yours to be a member of the Ohio Society of Professional Engineers. Challenge him with the proposition of risking $2.50 (or whatever it is) on his profession and take out a "trial membership." Tell him that he doesn't have to pay his dues next year if he doesn't like us. Tell him that all the arguments in the world might not convince him of anything and they take too much time anyway, but that you want him to try this thing out for himself.

LET'S GO! RIGHT NOW! AND "EVERY MEMBER GET A MEMBER."

* * *

At the request of the Ohio Society of Professional Engineers, the Board of Registration of Engineers and Surveyors asked the Attorney General for an opinion on whether or not college graduates, who had not yet completed their four years of experience, could apply for registration as Engineers in Training before January 1, 1946, and be exempt from the written examination.

The Attorney General says "Graduates from engineering and surveying courses in schools or colleges approved by the State Board of Registration for Professional Engineers and Surveyors as of satisfactory standing are entitled to be registered without examination as engineers or surveyors in training provided graduation occurs prior to January 1, 1946 and an application for registration is filed prior to such date. In order to obtain final registration without examination the four years of experience required by said Section 1083-13 must be obtained prior to January 1, 1946 and the application for registration filed before that date.

In the event said four years of experience cannot be acquired prior to January 1, 1946 persons seeking final registration are required to take the second stage of the examination provided for in said Section 1083-13, General Code." (The second stage referred to is an examination covering the four years of experience which may be either written or oral, or both.)

PENNSYLVANIA

Erie Chapter

A recent issue of the Erie Professional Engineer shows that the membership of that Chapter took their problems and objectives seriously. The same objectives could well be adopted by every Chapter throughout the country:

1. To conduct a planned campaign for the advancement of the engineering profession in public recognition, confidence and esteem.

2. To secure the inclusion of the professional engineer in the planning, development and operation of public projects, also national, state and municipal engineering works, and in the preparation of legislation pertaining thereto.

3. To promote the participation of professional engineers in national, state and local affairs and to cooperate with national, state and local governmental authorities and other interested groups in public service to the nation and its citizenry.

4. To elect engineers to public office.

5. To conduct an active planned campaign of publicity on behalf of the engineering profession.

6. To conduct a campaign to secure public credit and recognition for engineers in connection with their work.

7. To educate the public to a realization of the professional status of the registered engineer and to secure recognition for the profession.

8. To initiate and promote legislation on behalf of the profession and to watch, report and fight any legislation, national, state or local, tending to injure the interests of engineers or to deprive them of any of their professional rights.

9. To help secure the enactment of a model uniform registration law in every state.

10. To help secure reciprocal registration between States.

11. To strengthen, unify, extend and enforce legislation in Pennsylvania protecting the public welfare, the practice of engineering and the designation "engineer."

12. To encourage and insist upon the registration of all eligible engineers engaged in engineering practice.

13. To restrict the designation "Engineer" to registered professional engineers and to prevent the performance of engineering duties by other than qualified registered engineers in either public or private work.

14. To advance and protect the economic and professional interests of the engineer, individually and collectively, through united effort legislation and public relations.

15. To protect the engineer against exploitation, unprofessional competition, unlawful encroachment and restriction of rights to practice.

16. To conduct a campaign to stimulate worthy engineering projects, public works, and to promote increased demand for engineering services.

17. To improve conditions of employment and methods of engaging engineering services.

18. To extend employment service.

19. To raise the standards of compensation (fees and salaries) for engineering services.

20. To promote cooperative and fraternal relations within the profession.

21. To cooperate fully with all engineering groups and individuals toward professional unity and solidarity throughout the entire profession, regardless of specialty or classification.

22. To encourage better selective methods for admission of students to engineering schools and to elevate both entrance and graduation requirements.

23. To reduce any oversupply of engineers by promoting selective limitation of student enrollment in engineering schools.

24. To encourage and guide engineering pupils, engineering assistants and engineers-in-training.

25. To build up and maintain an active State Society with politically distributed local Chapters.

26. To cooperate actively with the National Society.

27. To organize, coordinate, unite and extend the activities of our local Chapters.

28. To build up and administer a reserve fund for assisting engineers in economic distress, also to assist local units in critical legislative campaigns on behalf of the profession.

29. To encourage the publication of the "American Engineer" in every way.

30. To publish a State Society Periodical.

31. To encourage membership in this Society to all eligible engineers.

32. Advocacy of law requiring seal of registered engineer or architect on all plans submitted to governmental authorities.

33. Approval of any action tending to the proper use of terms "Engineer" and "Engineering."

34. Protection of engineers' interests in existing emergency conditions.

35. To raise the social and economic status of the learned profession of engineering to such a level as to enable engineers of every grade to maintain a standard of living commensurate to their indispensable service to society, and thus to preclude the necessity of engineers of any grade to seek the aid of any non-professional movement to gain such an enhanced status.

There are approximately 75,000 registered professional engineers in the United States, although many of them do not belong to the NSPE. There are registration laws for the licensing of professional engineers in forty-six states. Engineering is a profession and is becoming recognized rapidly as one of the most highly trained, skilled and technical professions in the United States. Many of the professional engineers are engaged in private practice such as consultants or advisors, while the greater proportion are a vital factor in large corporations employed in their engineering departments. The NSPE is entirely devoted to the benefit of the engineering profession, engineer's welfare, recognition and reasonable compensation for his services. It is the open season for prospective members.

WEST VIRGINIA

The West Virginia Society of Professional Engineers was recently very much concerned, and rightly so, over a statement by the State Board of Education of West Virginia, that the West Virginia Institute of Technology at Montgomery would give courses in "Custodial Engineering," for janitors of school buildings.

Protests were made by the Society to the proper State officials that this was just another encroachment upon the rights of the engineering profession as defined by the State law. Efforts made to cash in on the prestige acquired by engineers through many years of useful service rightly causes concern to all the thinking membership of the profession. When termite exterminators, janitors and salesmen of many kinds of equipment decide that some form of the term "engineer" must be added to their titles in order to make more money or to make their services in greater demand it is evident that the professional engineer, properly registered by law, is lowered in public esteem.

The offering of a course in "custodial engineering" for janitors at a school financed by the State is just another example of the embarrassment caused engineers by such usurpation of the term "engineer."

THERE ARE ENGINEERS — AND ENGINEERS

There have been—and still are—many cases of persons or firms engaged in various vocations advertising themselves as engineers. There seems to be a great variety of these rather "different" types of engineers.

A company in Pittsburgh employs a "Chimney Engineer," while in South Bend a small office supply store supports a huge sign "Office Engineers," an imposing title! According to a magazine, a gentleman in Chicago is "America's No. 1 Crowd Engineer," since he operates a nation-wide ushering business. A local wrecking company uses the title "Wrecking Engineer" on its letterhead, while the term "Employment Engineer" found in a college textbook, is also used locally. A New York vocational counselor distinguishes himself as a "Human Engineer." Recently, there was a convention of "Baking Engineers." Lastly our little comic strip hero, Mickey Mouse, visited a "Bee-Keeping Engineer" in hopes of having a friendly swarm of bees disengaged from his head.

Possibly the editor of a well known technical magazine was correct when he wrote that "There is no more flexible word in our language than the word 'engineer'." This fact is well illustrated in the absurd cases mentioned above.

In the past, anyone engaged in any vocation which included scientific or mechanical work, was able to dub himself an engineer and be publicly accepted as such. A self-coined classification was often attached to the title with the result that we have been surrounded by a bedlam of "Business Engineers," "Agricultural Engineers," "Administrative Engineers," "Service Engineers," "Fire Engineers," ad infinitum! With the state licensing laws now in effect, this promiscuous practice is undoubtedly on the decline.

Although definitions and titles do not make engineers, it would seem quite necessary at this critical period in the growth of the Professional Societies, to clearly and definitely describe the true character and scope of our profession. Only by thus educating the public, including these pseudo-engineers, as to the real intent and purpose of our profession to perform a public service in an honest and dignified manner, can the engineer expect to become accepted as a truly professional man.

THE DAYTON ENGINEER.

Many wise words are spoken in jest—but they can't compare with the number of foolish ones spoken in earnest.

Readers' Forum

98 Bay 22nd St., Brklyn, N. Y.
July 23rd, 1945.

Editor, The American Engineer.
New York, N. Y.

Dear Editor:

With reference to the advocated preliminary examination for Engineer in Training, leading, in due time to the Professional Engineer Licensing, I wish to add my views arising from personal experience of more than 25 years in the most diversified fields of engineering. It is a necessity, for every engineer, no matter what field he is engaged in, to have at all times a clear and sound knowledge of all the fundamentals of equilibrium, thermodinamics, hydraulics, etc. Certainly it does not help, from the professional point of view, to know that an engineer used to know 5 or 10 or more years ago, all the nice long formulas and apply them automatically to a certain problem; if, by any reason whatsoever he is not in a position today to see his way clear in the interpretation and application of those fundamentals. I do not mean detailed information, or memorizing of formulas, but general principles leading to complete studies. I believe that engineering students should, or rather must associate with more advanced engineers and learn their way of reasoning and talking and dealing, and that admission as Engineer in Training in the Society shall be made as soon as they are admitted to a recognized Engineering School. Technical examinations on engineering fundamentals will undoubtedly be given by the school. Then, after graduation and the due period of experience in the selected specializd field of engineering; an examination shall be given covering all the fundamentals of engineering as expected to be known from any practicing engineer and a detailed examination in the specialized field, namely, structural design, civil, mechanical, electrical, etc. In this way I believe will be satisfied the purpose of the Engineering Profesion, an assurance that the neo Licensed Professional Engineer is well equipped technically, ethically, socially and by experience.

Hoping that my thoughts on the subject will be given a chance of discussion by more experienced scholars and educators in the interest of the Engineering Profession.

I remain yours truly,

Francis Santoro
Professional Engineer.

I. E. Morris
Structural Engineer
Palmer Building
Atlanta 3, Georgia
July 7, 1945

Editor,
The American Engineer,
6 Church Street,
New York 6, N. Y.

Dear Sir:

In recent months I have read many articles and letters concerning the improvement of the status of the Engineer. Most of the effort, it seems, has been directed toward stricter registration laws and a greater emphasis on ethics. All such efforts are commendable—and necessary—but I think we have overlooked one important point: Publicity in the form of information placed in the hands of the proper individuals.

In this section of the country there are many architects of the "Old School", who still think that they are supreme in the field of building construction; that the enginer is a more or less necessary nuisance whom they must tolerate, provided such tolerance does not cost them much. In most cases, these architects are very likeable old gentlemen, and their attitude is due to a lack of understanding of modern engineering principles and to a custom which has been handed down through the years. They were taught in school, either directly or indirectly, that in the field of building construction they would be supreme. And the building Owners, those who finance construction, have accepted this attitude without question,—and apparently without thinking. Such an attitude had some logical basis fifty or more years ago, when buildings were largely masses of masonry; but recent technological advances and the more scientific methods of structural design have changed the situation completely. Many architects have accepted the fact and are working *with* the engineer instead of merely tolerating him. And these are the architects who will be the future leaders of their profession.

But many others still mistake the fog which surrounds them for a heavenly halo. They blithely prepare plans for jobs which are ninety per cent engineering and never think of giving the engineer a bit of credit by allowing him to put his name on the drawings. Yet, they yell "Unethical!" if an engineer takes the same type of job and employs an architect to do the ten per cent of architecture. I know of two extreme cases in which architects have stated that an engineer should never take the complete job; that he should turn it over to an architect and then work *for* the architect at the usual rates. Obviously such a view is ridiculous in the extreme.

But let me hasten to say that I am not condemning the architectural profession. I think that architecture in construction is indispensable. And I have some very good friends who are architects. But I do hold that the engineering profession is of equal importance and is equally indispensable. The two professions should work together, each should recognize the importance of the other, to their mutual benefit.

The Federal Government is responsible for the current Architect-Engineer setup. In the future, though, we shall add to this, as a natural and logical development, the style Engineer-Architect. But, to produce this evolution, we shall need the publicity referred to in an earlier paragraph. Those who finance building construction will have to be informed of the

part which the engineer plays in the design and construction of buildings. They will have to be told that, after all, the engineer is not an inferior being, that in many cases he is the power behind the throne; that his training prepares him to "get things done" rapidly and efficiently; that his executive ability is on a par with that of the architect, and that he can be trusted to hire architects who will give to his structures the requisite amount of art and functionalism, just as the Architect hires engineers to design a frame to support the art and to make the functionalism function. There should be some way to let the Owner know that when he wants a building designed, he is not forced to turn to an architect; that he can obtain the same service by engaging an engineer.

We should be very careful, however, not to depreciate the value of the architect's services. Our aim should be to show that we have a service which is equaly good, and that we have an equal right to offer it for consideration. The smart architect will accept the competition as just and legitimate. Those who oppose it will find themselves in the position of all who oppose irresistible trends, for it has been abundantly proved that the progress of civilization has never been adversely affected by competition in business.

Very truly yours,
I. E. Morris.

Ensign Benjamin P. Robinson
97th USNCB
c/o F.P.O., New York, N. Y.
The Editor, "The American Engineer"
415 Lexington Avenue,
New York, N. Y.
Dear Sir:

Professor Munger's paper—"Where Do We Go From Here," presented in the May, 1945 issue of "The American Engineer," presents a picture that definitely provokes thought and discussion.

I am a Junior Member of the American Society of Civil Engineers and a Member of the National Society of Professional Engineers. As of 9 April, 1945, A.S.C.E. membership was 20,670, broken down as follows: Members, 6,214; associate members 7,820; total corporate members 14,034. Honorary members, 36; juniors, 6,552: affiliates 77; fellows 1; Grand total — 20,670.

Of that group, how many are Professional engineers? Can the oldest of the "Founder Societies" qualify as having a majority of its members Professional Engineers?? Or would Professor Munger only consider the 14,034 corporate members.

In any case, I am not so sure that I approve of the "marriage." I joined the N. S. P. E. because I believed it was the only organization sincerely interested in the establishment of engineering as a profession in the eyes of Society. I still believe this to be true. The A.S.C.E. is, to my mind, the best technical society in the Civil Engineering Field. The A.S.C.E. has no clear cut program or statement of aims which defines its attitude towards the advancement of engineering as a profession. *That is not one of its objectives.* Mind you, this is not a complaint —if it were, I would have resigned from the A.S.C.E. long ago.

Would the inclusion of a member of the A.S.C.E. on the Board of Directors of the N.S.P.E. be a step in the right direction? Let us assume—for the sake of argument — that the A.S.C.E. has, on its roster, 5,000 professional engineers. If they are interested in the advancement of engineering as a profession—*why have they not joined* the *N.S.P.E.?* Perhaps, as Professor Munger intimates, some of them are professional engineers in name only, or, perhaps it is the fault of the N.S.P.E. in not better publicizing its aims. Probably both answers are partially correct.

I am looking forward, with interest, to discussion on this subject by engineers from other branches of the profession.

Benjamin E. Robinson
Ensign C.E.C.(S) U.S.N.R.

Often we dislike a man until we discover that he has many ideas like our own.

* * * *

Business is what, when you haven't got any, you go out of!

NEW YORK STATE SOCIETY SEEKS EXECUTIVE SECRETARY

The New York State Society of Professional Engineers, Inc., has reached a stage in its growth when it is necessary to engage a full time executive secretary in order that the interests of the Society, its members, and the engineering profession may best be served. The officers and committees who have in the past so generously devoted their time to the work of the Society realize only too well the need for a capable and energetic executive secretary.

At the last meeting of the Executive Board the Executive Committee of that body was empowered to solicit and interview candidates for this office. The man to fill this position should have the following qualifications:

He should be a mature man of pleasant personality with initiative and executive ability, capable of representing the Society on any occasion.

He should be in full accord with the objectives of the Society and be a convincing speaker in order that potential members and purchasers of engineering service may be sold on the need for the Society.

He should have a knowledge of New York State legislative procedure and be acquainted with members of the Legislature.

He must be willing to travel throughout New York State to visit Chapters and assist them in solving their problems.

He should be a good organizer, capable of taking care of the many details necessary for the smooth running of the Society.

He must be willing to devote his full time to the business of the Society. The position is not one of a temporary nature and its future will depend upon his ability to increase membership and the activities of the Society.

The Executive Committee of the Society is presently considering qualifications of candidates for this position at the headquarters of the Society, Room 1141, Grand Central Terminal, New York.

Briefs of Interesting Articles

THE TIME FOR LOW PRODUCTION COSTS IS NOW

The August issue of Factory Management and Maintenance is practically given over to its Fifth Annual National Production Issue.

The importance of maintaining a high standard of living for a country grown accustomed to a war economy, is stressed and it is emphasized that a wide distribution of industrial goods cannot take place unless its goods are low-cost goods when measured by the ability of people to buy them. What makes them low-cost is minimum input of human energy, materials and manpower in their manufacture.

Only America has developed the required procedures to the extent necessary for immense production while paying wages and costs that would be prohibitive in any other country, and only America can apply effectively the ten procedures which are the keys to the low-cost production methods of today.

Each of these ten procedures fills a separate chapter, and they include the following suggestions: (1) Select the right workers; (2) Train employees to do the job; (3) Adopt the best in lay-out; (4) Use the most effecive handling; (5) Practice work simplification; (6) Plan and control production; (7) Make the plant a good place to work; (8) Evaluate jobs and pay accordingly; (9) Keep equipment and plant in condition; and (10) Provide management controls.

The authors of these individual chapters can all speak with authority on the subject on which they write. Their positions in industry guarantee this.

ATOMIC ENERGY BOMB DATES NEW ERA IN POWER

Mr. A. E. Knowlton, Associate Editor, Electrical World, has a four-page article in the August issue of that magazine, in which the atomic energy bomb and its effects are described in some detail.

There also appear in the article, the opinions of several prominent engineers regarding the possibility of the harnessing of atomic energy for industrial purposes. Among those whose opinions are quoted are: E. C. Stone, Vice-President and General Manager, Duquesne Light Co., S. H. Mortensen, Chief Electrical Engineer, Allis-Chalmers Mfg. Co., S. M. Dean, Chief Engineer, Detroit Edison Co., John C. Parker, Vice-President, Consolidated Edison Co. of New York, R. A. Millikan, Chairman of Executive Council, California Institute of Technology, F. S. Clark, Consulting Engineer, Stone & Webster Engineering Corp., P. Sporn, Executive Vice-President American Gas & Electric Co., Royal W. Sorenson, Professor of Electrical Engineering, University of California, and others.

Their opinions and forecasts make very interesting reading.

INDUSTRIAL WASTE

In its August issue, Chemical and Metallurgical Engineering presents a report on industrial waste and draws attention to its importance as a factor in process planning. The article emphasizes the fact that although waste utilization has long been recognized as an important factor in the economics of the process industries, waste disposal, on the other hand, has received far too little attention, with the consequence that pollution and the effects of industrial waste have increased tremendously over the years. He points out that the effects of pollution have multiplied and have become more significant than ever, in the light of renewed activity by the Anti-Pollution Groups (local, state and national) which is focusing public attention on this subject.

The article describes several typical state regulations, as well as federal regulations, to control industrial waste, and draws attention to the problem which confronts management and the cooperation on the part of industry which is necessary, if any real progress towards reducing pollution is to be achieved.

The article is illustrated with many photographs and contains several valuable suggestions for controlling the waste.

REPORTS ON GAS TURBINES

The August issue of Power Plant Engineering contains three unusual, interesting articles dealing with the subject of gas turbine operation.

One of these is by Arthur E. Pew, Jr., Vice-President of the Sun Oil Company, reporting on the operation and maintenance records of seven gas turbines installed by Sun Oil Company in its oil refineries for propulsion of axial air compressors. The compressors supply high pressure air in connection with the catalytic cracking of petroleum for the manufacture of 100-octane aviation fuels, and high-octane motor fuels.

The second article reports on the operation of a 2000-kw gas turbine plant for power generation and is the abstract of a paper contributed by the Oil and Gas Power and Power Divisions of the A. S. M. E., before the Chicago Section of the ASME on June 19, 1945. The plant in question was developed, operated, and tested at Escher Wyss Engineering Works, Zurich, Switzerland.

The third article is based on an interview by Chester R. Earle, Associate Editor of Power Plant Engineering with John I. Yelott, Director of Research, Locomotive Development Committee of Bituminous Coal Research, Inc. This article outlines the work done by the Committee and details the tests made to date under its supervision.

A SURVEY OF COOPERATIVE COUNCILS

In the August issue of Electrical Engineering, Frank E. Sanford publishes an interesting article which sketches the growth of local councils of engineering and technical societies and brings developments of the movement up to date.

The author gives some valuable information on the present status of these councils in the United States, and urges that scientific men formulate cooperative plans and arrangements for the interchange of their highly specialized knowledge and the spreading of their technological advances.

SALVAGING A BIG ARMY CAMP

The August 23 issue of Engineering News-Record contains an interesting article of the salvaging of Camp Hale, Colorado. This work is construction in reverse, dismantling instead of erecting, releasing critical materials instead of procuring them. The big camp is being efficiently and economically dismantled and entirely salvaged by United States Army Engineers, with prisoner-of-war labor, thus furnishing critical materials to other military installations.

The article describes the methods used for salvaging the different types of buildings and the materials of which they are constructed, and shows how special tools were developed for special operations.

Like the traditional packing-house story about utilizing every part of the hog but the squeal, practically every bit of the many camp installations will be usable.

COURT UPHOLDS ENGINEERS RIGHT TO CONTROL CONTRACT CONSTRUCTION

The right of the engineer on a construction job to use wide discretion in interpreting the contract was reaffirmed by a recent decision of the Supreme Judicial Court of Massachusetts. The Court held that a contractor is not entitled to additional compensation even for decisions that are "unreasonable and unnecessary" so long as those decisions were no more than could be called for by honest engineering judgment, and were not made in bad faith.

Extensive quotations from the Court decision were published in the Engineering News-Record for August 9th, and will prove interesting and informative reading.

SURPLUS ELECTRONIC EQUIPMENT DISPOSAL PLAN

Electronics for August contains an interesting article by G. T. Montgomery, Washington Editor, on the surplus electronic equipment disposal plan which the Government intends to pursue. The article gives details of the plan by which military radio and other electronic equipment may be marketed through regular trade channels by manufacturers. The conditions of sale, guarantees and prices, the type of gear available, and many other details are included in the article.

G. I. JOBS IN THE ELECTRICAL CONSTRUCTION INDUSTRY

Veterans returning to their old jobs in the electrical construction industry will find their way eased by well organized planning. But what of the vast majority who must find their way to new jobs? They went into the war from school and college or from the casual work of youngsters yet to settle down.

Today these boys are mature, earnest, ambitious. They have acquired specialized skills. Some, with experience in the vast array of electrical apparatus used in modern warfare, look to electrical construction, installation and maintenance. What jobs are there? Where can we fit in? How do we get started?

They have asked these questions, and an article in Electrical Contracting for August methodically outlines several of the answers. Furthermore, the publication offers a moderate number of reprints of this article to be sent to friends in the Armed Services who prior to induction, were employed in the electrical construction industry.

WINNING A PROFIT FROM $2.10 GOLD ORE

Engineering and Mining Journal for August, 1945, has an illuminating article describing how the Standard Cyaniding Co., of Imlay, Nevada, proved it profitable to handle low grade gold ore averaging $2.10 at the new price of the metal. Taking advantage of economic conditions that make for low operating costs, the Company mined and treated at a profit half of its million ton deposit of $2.10 gold ore between November 1939 when it started milling, and the date in 1942 when it suspended operations in compliance with Government closing order No. L-208.

The Company operated its own cyanide plant, obtaining its ore from its working through a contractor. The Company averaged $1.86 and cost $1.18 per ton milled. A complete flow sheet and tables of operating, appear in the article.

FREIGHT RATES AND INDUSTRY LOCATION

An editorial by James H. McGraw. Jr., on this subject appears in several of the McGraw-Hill publications for August, including: Electrical World, Aviation, Electronics, Engineering and Mining Journal, and many others.

The editorial refers to the recent decision of the Interstate Commerce Commission, which took effect on the 30th of August, eliminating some of the advantage in freight rates which Eastern shippers have enjoyed over shippers of the South and West. Mr. neither destroy the economy of the in- McGraw says: "This decision will dustrial East nor will it, overnight, result in industrial flowering of the South and West. It constitutes one sound step toward establishing the equalities of operation for all sections of the country which is essential for a nation which bears the proud title of the *United* States".

THE ATOM

The August 30th issue of Engineering News Record contains much interesting material regarding the atom, as a new source of energy. An editorial by James H. McGraw, Jr., referring to the fact that we hold the trust of power that is capable of unravelling the very fabric of our civilization, says: "No walls have ever been built high enough to fence in the spread of scientific knowledge and even if we were to resolve to forgo the harnessing of atomic power for peace it is hopeless to think that the application for war can be held for long as a monopoly of one or a small group of nations".

Articles in this issue include "How Atom Splitting Releases Energy", "Creating and Isolating the High-Power Atoms", and "What to Expect from Atomic Energy."

Lots of people know a good thing the moment some other fellow sees it first.

* * * *

A purchasing agent who requested a supply house to send him a new catalog, received this reply: "The only part of our catalog we are still certain about is the line that says 'Established in 1885'. All other information and prices have been withdrawn."

Book Reviews

HANDBOOK OF NONFERROUS METALLURGY

By Donald M. Liddell, Editor-in-Chief

This book is the first part of a two-volume handbook giving detailed, authoritative principles, methods and daa for the practicing metallurgist. It contains a comprehensive treatment of those operations, apparatus and methods fundamental to all branches of nonferrous metallurgy.

The book develops the correlation between the fundamental concepts in the different divisions of the subject. The physics of crystals and crystalline aggregates is stressed, and the structure of metals is thoroughly explained in the light of modern conceptions arising from X-ray crystallographic research.

626 pages, Cloth, 6 x 9, Illustrated $6.50
McGRAW-HILL BOOK COMPANY, INC.

METALS AND ALLOYS DATA BOOK

By Samuel L. Hoyt

This book contains 340 tables of critically evaluated data on wrought and cast steels, stainless steels, cast irons, heat- and corrosion-resistant casting alloys, aluminum, copper, nickel and tungsten alloys and rare metals. These tables offer up-to-date information on all the important properties of these metals and alloys such as tensile srength, hardness, thermal expansion, creep strength, high-temperature behavior, work-hardening, endurance limit and yield strength, to mention only a few.

The book is expressly designed for the needs of materials engineers, metallurgists and others engaged in establishing designs for automotive equipment and general construction work in determining safe service conditions and in predicting performance. It will be found useful by the technical personnel of all metal-using industries, such as ordnance, ship-building, airplane, electrical and electronic, and agricultural implements, and to producers of steel, copper, brass, aluminum, and other metals and alloys.

350 pages, Cloth, 7 x 10, 340 tables, Illustrated $4.75
REINHOLD PUBLISHING CORP.

UNCLE SAM'S BILLION DOLLAR BABY

By Frederick L. Collins

In "Uncle Sam's Billion Dollar Baby," Frederick L. Collins gives the first wholly uncensored and unawed attempt to answer such questions as: Shall we have more TVA? Shall Government wholly supplant American business? Shall we go Socialist?

This book is a report to the nation on a subject vitally affecting the American way of life. Using a human, easy-to-understand method of presentation, the author puts a wealth of new information on parade. Stripped of its literary aspects, his book is the news behind the news on a topic which is and will continue to be headline material.

174 pages, Cloth, 5½ x 8¼ $2.50
G. P. Putnam's Sons

INTRODUCTION TO ELECTRONICS

By Ralph G. Hudson

This book explains the science of electronics and its modern applications in terms that will be understandable and useful to those with only an elementary knowledge of mathematics and physics. It gives the reader a clear and scientifically exact knowledge of the modern theory of the constitution of matter and the nature of an electric current in a gas, a liquid, a solid, and in a vacuum. It describes and illustrates all of the major uses of electronic tubes and photo-tubes, the construction of electronic devices and their working principles.

100 pages, Cloth, 6 x 9, Illustrated $3.00
THE MACMILLAN COMPANY

GLASS, THE MIRACLE MAKER

By C. J. Phillips

This book is an accurate, up-to-date and comprehensive account of the technology of glass. Engineers, industrial designers, executives and students will find it a source of suggestion in new products and improved production methods.

Written in such a way that it is mid-way between a technical but non-mathematical treatment of the subject, and an interesting running account of the many uses of glass in every field.

436 pages, Cloth, 6 x 9, Illustrated $4.50
PITMAN PUBLISHING CORPORATION

INTRODUCTION TO PRACTICAL RADIO

By Durwood J. Tucker

Beginning with the basic electrical principles, this book covers all laws, principles and fundamental working parts of radio. The necessary mathematics for each step is fully reviewed at the point where it is needed and used. Theory is explained in a practical manner and in simple language. Numerous specific examples of the practical application of principles to actual radio construction and operation are included throughout.

322 pages, Cloth, 6 x 9, Illustrated $3.00
THE MACMILLAN COMPANY

FUELS AND THEIR UTILIZATION

By A. R. Carr and C. W. Selheimer

This is a comprehensive, clear and simple discussion of all kinds of fuels now in practical use. The whole subject of fuels is brought within the scope of one volume, without any attempt to go fully into thermodynamics, but the various fuels, which, in current practice, are available for the production of heat, the means by which they are utilized to this purpose, and the modern investigations and tests to increase and maintain efficiency in the production of heat, are fully discussed with attention to both principles and applicaions.

Fuels, both liquid and solid, are classified and their purposes and characteristics described.

184 pages, Cloth, 6 x 9, Illustrated $2.00
PITMAN PUBLISHING CORPORATION

SCIENTIFIC SOCIETIES IN THE UNITED STATES

By Ralph S. Bates

The history and the influence of the scientific societies of the United States are the themes dealt with in this book. It contains a full scale account of the evolution of American scientific organizations, including the main national scientific societies and the state, local, specialized and technological societies.

A very complete bibliography and index will be appreciated by readers.

246 pages, Cloth, 5½ x 8¼ $3.50
JOHN WILEY & SONS, INC.

What's New

(News from industry — gathered by the publisher)

Requests for further information concerning any item mentioned under this heading will be promptly referred to the manufacturer. It would be appreciated if inquiries be addressed on professional or company letterhead.

LUMBER CALCULATOR

Instantly transforming lineal feet into board feet, a new lumber calculator should be of inestimable value to any person handling or estimating lumber. Simple and easy to use, it instantly calculates the number of board feet in any size stock from ¼-inch thick to a beam 20 x 30 inches.

This new calculator is a slide rule type calculator, made of well-seasoned wood with white lacquer face, and will last for years.

Anyone having occasion to estimate lumber will find this calculator a dependable aide and a real time-saver. It's accurate, as easy to carry as a carpenter's rule and gives the correct answer at a glance.

For further information, address American Engineer, reference No. 389.

MIXERS, PEBBLE & BALL MILLS

A 10-page bulletin illustrating several different types of mixers, pebble and ball mills, part of a line of process equipment manufactured by the company, is now available.

The company also makes many other types of processing equipment such as agitators, conical dry blenders, autoclaves, etc.

For further information, address American Engineer, reference No. 390.

RESIN-TYPE CEMENT

A new and superior resin-type cement has recently been developed. This cement is a quick-setting, cold-hardening acid, alkali and solvent proof product composed of a liquid and a powder which, when mixed, react chemically to form a cement. It has been designed specifically for bonding corrosion-proof brick and tile in uses where both acid and alkalis are encountered. Typical applications are laying floors and drains, and lining tanks in shops where a cement is required that will resist corrosive acids, alkalis and solvents.

For further information, address American Engineer, reference No. 391.

DIESEL ENGINES FOR MUNICIPAL POWER PLANTS

A growing demand for Diesel engines for producing the power in municipally-owned power plants is revealed in a recently published booklet. Covering the use of Diesels in city power plants, the booklet is the first of a series to be issued under the general title, "Diesel Facts."

Prior to 1910, comparatively few Diesels were used to generate current for municipally-owned power plants. Ten years later, 38 million kilowatt-hours were being generated by Diesel engines in such plants. By 1930 the figure was 250 million kilowatt-hours, and in 1943 it had increased to nearly two billion.

Savings effected by Diesels over other types of power have been spent by municipalities in a variety of ways. In many cases they have been used to pay for the engines themselves. In other instances they have made it possible to reduce power rates. Taxes have been lowered in a number of communities, while others have used their power plant savings to improve street lighting, water service, or police protection.

A special section of the booklet treats of the procedure to be followed by a city that wants to have its own power plant. Another section oulines the widespread use of Diesel engines in the generating projects of the Rural Electrification Administration.

For further information, address American Engineer, reference No. 392.

DEGASIFICATION OF WATER

This 18-page catalog gives technical information regarding the degasification of water and the necessary equipment for this operation.

Among the items covered in the catalog are the removal of ammonia, the removal of carbon dioxide and hydrogen-sulphide and oxygen from hot water and cold water for process and boiler feed.

For further information, address American Engineer, reference No. 393.

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WHY?—Because they know we have long lists ready to draw from.

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Look Over This List Below and Satisfy Yourself.

⅝ yd Northwest Model 20 shovel and dragline, rebuilt and guaranteed, late model.

⅜ yd recent model Insley K-10, excellent condition shovel, crane, backhoe, clamshell bucket, 60 day guarantee.

½ yd P&H Model 150, excellent condition, shovel, backhoe, crane, two clam buckets, 10 wheel trailer.

½ yd Northwest Model 2 shovel built in 1936.

⅜ yd diesel Link-Belt Speeder shovel, 1940-1941 model excellent condition.

½ yd Unit shovel and backhoe combination, ¾ swing, real nice machine $2950.

Two Byers Bearcat ⅜ yd skimmer, crane and shovel combination $1650. each.

Half swing Insley 1/3 yd shovel in rather good operating condition at a bargain price $1950.

½ yd Bay City Model 25 shovel, backhoe combination, 1939 model, excellent condition.

½ yd Industrial Brownhoist scraper shovel $1450.

⅝ yd Bucyrus-Erie 10/20 shovel, backhoe and solid tired trailer $4900.

½ yd Byers ¾ swing, Hercules 4-cyl. engine $2750.

½ yd Byers Model 28—30' boom. $3100.

½ yd General dragline, 35' boom, Page dragline bucket, $4900. a 1938 General ½ yd shovel and dragline combination—35' boom—½ yd bucket—6-cylinder Buda gas engine—rebuilt and guaranteed.

½ yd Model R Insley shovel and backhoe combination. Condition only fair. Price $2950.

½ yd Link-Belt Speeder Model B-3 shovel in rather good operating condition at a bargain price, $3450.

⅝ yd Byers Model 66 crane, backhoe and fairleads. Condition good, $5900.

½ yd P&H Model 200. Fair condition. $2200.

¾ yd Bay City Model 16B—2 skimmer buckets and backhoe—half revolving. $1650.

A 1941 ¾ yd Byers Model 83 backhoe shovel and dragline combination—rebuilt and guaranteed.

A 1939 Marion Model 331 backhoe and shovel combination—¾ yd capacity—rebuilt and guaranteed.

Keystone ¾ yd excavator $1750.

Lorain Model 40 shovel and dragline combination—¾ yd capacity.

¾ yd Northwest Model 3 shovel and dragline—exceptionally good buy for $6450.

¾ yd P&H combination shovel and crane with fairleads—entirely rebuilt and guaranteed. Price $6300.

1 yd Byers serial number in the 3600s with 60' boom—powered by Hercules. Price nominal—only $4400.

1 yd Late model Koehring Type 376—entirely rebuilt top to bottom. Price $8750 which is way under its market value.

1¼ yd Link-Belt 1935 or 1936 model, 65' dragline boom, shovel attachments. Light weight Page bucket. $8400.

5 YD. SHOVEL
1943 P&H Model 1500

Electric Shovel in Excellent Condition, 34' shovel boom, 22½' dipper stick, 5 cu. yd. dipper bucket and electric cables go with the equipment.

Write, phone or wire for further information.

One ⅝ yd. P&H Model 300A sh... and dragline combination exce... condition. Rebuilt and guaran... Real buy for $5300.00.

¾ yd Northwest Model 25 backhoe and ... combination. Built in 1939.

¾ yd Northwest Model 105. An old unit bu... good operating condition with Climax 4-... engine. $4850.

¾ yd P&H Model 204 dragline, 35' boom, $...

¾ yd P&H 206, $2900. including bucket.

¾ yd P&H 400 Shovel. $4750.

1 yd Bucyrus-Erie 30B Diesel crane, pow... Atlas Diesel Engine. An old model bu... good buy.

1 yd Lorain 60A shovel and dragline comb... Entirely rebuilt.

1 yd Lorain Model L55 in exceptionally goo... tion.

Two 1 yd Koehring Model 301.

1 yd Northwest Model 101 in fair condition

1 yd Diesel Osgood shovel and dragline. C... Diesel Engine. Unit is in good condition.

1¼ yd Byers Shovel and Dragline comb... Good condition. Price exceedingly low, $...

1¼ yd Lima Model 101 shovel and dragli... bination. Price reasonable.

1¼ yd Lorain 73A shovel. $9450.

A rebuilt Lorain 75B shovel, crane and ... combination. $11,900 with 60 day rebuilt ...

1¼ yd Northwest Model 4 in real good ... and very reasonably priced.

1½ yd Northwest Model 6 shovel and dragl... bination, with rebuilt guarantee.

1—1¼ yd Osgood shovel.

1—1¼ yd P&H Model 700B shovel and dragl... bination 60' boom, $7400.

1—1½ yd Bucyrus-Erie 37B shovel. One of ... buys we know of, $11,300.

1—1¼ yd P&H Model 700B shovel and cra... bination, price $7300.

1—1¼ yd Koehring 501A shovel. Needs certain ... of repairs. Price way under its value, $...

1—1¼ yd Koehring shovel Model 502—C... diesel engine. Reasonably priced.

1—1½ yd Lorain Model 77 shovel and drag... bination—45' dragline boom—rebuilt a... anteed.

2 yd Bucyrus-Erie diesel shovel and drag... bination—needs a certain amount ... $12,250.

1—¾ yd Koehring 701 shovel and crane, p... caterpillar $12,000, diesel engine.

2 yd P&H Model 780 diesel dragline—75' b...

2 yd Page dragline—60' boom—Page diesel...

2½ yd Bucyrus-Monighan walking dragli... powered 82' boom.

3 yd Monighan diesel 90' boom—Fairban... diesel engine—condition good.

2 yd Bucyrus-Erie 43B electric tunnel sh...

2 yd Bucyrus-Erie 50B electric shovel.

4 yd 120B Bucyrus-Erie electric shovel.

Two 3 yd Marion electric shovels, Model ...

7 yd Bucyrus-Erie electric shovel.

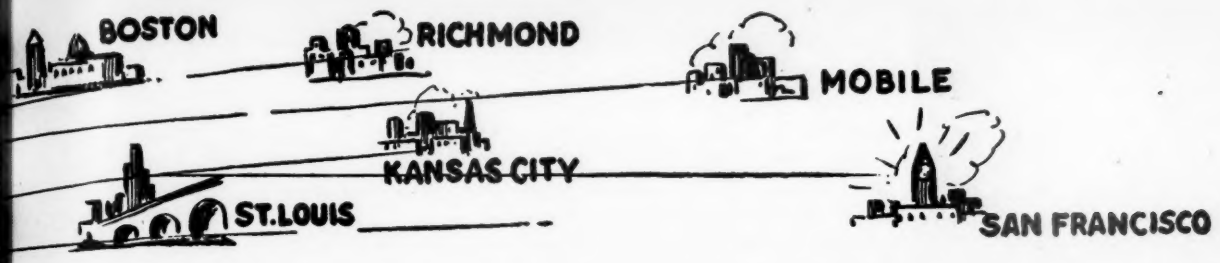
This is only a partial list of shovels, ... offer for sale.

We suggest you wire or telephone immedi... a summarized proposal.

Steam shovels from ¾ yd up to 8 yds.

Description will be sent upon request.

ECONOMY COMPANY



...re Buzzing for "ECONOMY"

TOURNAPULLS

...uper C Tournapulls, 1942 Models, Maryland, ...0,200.00 each.

...uper C Tournapulls, rebuilt, West Coast, $10,-...00 each.

...odel A 23 yd Tournapulls. A great bargain. Min-...esota. $11,200.00 each.

...odel C Tournapulls, $6300.00 each.

DUMP TRUCKS

...Sterling 7½ ton 1940 Models, 10.50x24 tires, ex-...cellent condition. $4950.00 each.

...1941 Sterling 7½ tons, 11.00x24 tires, $5500.00 ...each.

...1941 Ford dump trucks, $1375.00 each.

...Euclid 10 yd trucks with Cummins diesel engines, ...tire size 18.00x24, $5900.00 each.

...0 yd Maxi two way side dump trucks—price ...upon request.

...10 yd Euclid gas dump trucks, $4300.00 each. ...can offer several other dump trucks and Com-...e listings on small and large d'esel and gas ...p trucks and semi-trailers will be sent upon ...est.

SPECIAL

1—Diamond No. 35 Rotor Lift Vibrator Gravel Crushing and Screening Plant, equipped with dual pneumatic tires. Engine ROD8-20 Model No. 35-SC6 Heavy Duty motor, radiator, pulley and parts completely installed. Extra screens, belts, etc. Powered by gas.

Attractively priced, which will be given upon request.

TRAILERS

...Athey trailers with Linn tractors, late models, excellent condition, New England.

...35 ton Williams trailer with 12 large pneumatic tires, rebuilt, $3800.00; $1000.00 under ceiling.

...50 ton trailer with double drive Autocar, excep-...tionally good condition. Price upon request.

...15 ton shovel trailer, 6 pneumatic tires 40x8, ...mechanical brakes, excellent condition $980.00.

...1941 Freuhauf 14' dump semi-trailer 15½ yd ...capacity, excellent condition, $3900.00.

...other small and large trailers, description will ...be sent upon request.

TRACTORS

4—International TD-18 tractors with hydraulic bull-dozers, rebuilt and guaranteed condition. $6700.00 each.

1—D-8 Caterpillar Tractor with LeTourneau Angle-dozer and 12 yd LeTourneau scraper and other accessories. $12,350.00.

1—RD-8 tractor with bulldozer, double drum power unit, 12 yd scraper. $12,250.00.

1—D-8 Tractor with down pressure hydraulic bull-dozer, serial 9G3546. $4700.

1—Caterpillar 60 Tractor with Bulldozer, 10' blade. $1950.00.

1—Model 4 Caterpillar Tractor with LaPlant Choate brand new hydraulic bulldozer. $3900.

1—R-2 Caterpillar Tractor with LaPlant Choate Bulldozer, $2100.

TRUCK CRANES

1—Quickway Shovel and Crane Combination, 25' boom, 1000x24 brand new pneumatic tires, 6 ton capacity.

1—P&H Model 300—8-10 tons, 10 wheeler AC Mack trucks, 10.00x24 Budd wheels. Rebuilt guarantee.

1—Universal crane in excellent rebuilt condition on 10 wheeler Hendrickson truck, large tires.

1—P&H Model 203—7 to 9 tons, 6 wheels 900x24, 45' boom, $7600.00, a real bargain.

1—Speeder truck crane, 7½ tons, 25' boom, mounted on White Truck, $3900.

1—18 ton Byers truck crane on 10 wheeler specially constructed Mack truck, 65' boom, rebuilt and guaranteed.

1—Lorain 40—12 to 15 tons, 70' boom, 10 wheeler, special Mack chassis, 11.00x24 tires, $11,800.00

BUCKETS

1—½ yd Orange Peel bucket—rebuilt and guaran-teed, $225.

1—1 yd. Blaw-Knox single line bucket, $620.00.

1—¾ yd Kissler clamshell bucket, rebuilt, $495.

1—½ yd Williams clamshell digging bucket, very good condition, $435.00.

1—½ yd Page dragline bucket.

1—½ yd Owen clamshell digging bucket.

1—⅝ yd Owens clamshell bucket.

1—1 yd Hayward clamshell bucket.

1—1½ yd Page clamshell bucket.

1—Haiss ½ yd rebuilt dragline bucket.

1—1½ yd Page dragline bucket.

1—2 yd Page dragline bucket.

1—Owens 5 yd clamshell bucket.

Additional listing on buckets—over 110 in all will be gladly sent upon request.

SHOVELS

TRUCK CRANES

TRACTORS

DUMP TRUCKS

BUCKETS

OVERHEAD CRANES

LOCOMOTIVE CRANES

MIXERS

TRAILERS

CRANE ATTACHMENTS

GRADERS

BULLDOZERS

Complete listing on each of these items will be for-warded promptly on request.

A 6-YARD DIESEL MONIGHAN 5W with 150' dragline boom. Phone for further information.

...9-B **Vanderbilt Ave., N.Y.C.**

TELS. MURRAY HILL 4-2294, 4-2295, 4-2296, 4-2893, 4-2844, 4-8292

"PEERLESS" CHROME CLAD STEEL TAPES

Drag it across stone and gravel, scuff it against rocks and stumps and posts—you can't damage the smooth, chrome clad line of the Lufkin "Peerless" Steel Tape. The flexible, sturdy line is extra strong—built up by platings—and it's covered with a satin chrome "life jacket" that will not crack, chip, or peel. Easy-to-read jet black markings are recessed below the surface where they can't wear off. The Lufkin "Peerless" belongs with every surveyor's and engineer's equipment. Buy it from your dealer. For complete catalog write THE LUFKIN RULE CO., SAGINAW, MICHIGAN, New York City.

LUFKIN FOR ACCURACY

NEW SILICONES

Because of their unique and highly desirable properties, the silicones have aroused the interest of scientists, engineers and business men. Few synthetic materials have done more to revise old concepts of the properties of materials and to remove the limitations previously placed upon engineers by material considerations.

This recently released 12-page catalog contains many charts and graphs demonstrating the unusual properties of this rapidly increasing family of organo-silicon-oxide polymers.

These silicones are produced in many forms including Fluids, Greases and Compounds, Resins and Varnishes, and Silastic, the Dow Corning silicone rubber. In all of their forms the silicones extend permissible operating temperatures far above and below those at which comparable organic materials are serviceable.

All of these main classes of silicone products and many special formulations among each of them are described in this new booklet. Many industrial uses for these heat stable, waterproof materials are presented and many more will be suggested by their quite unique properties.

For further information, address American Engineer, reference No. 394.

REFRACTORY COATING

A new bulletin just issued describes a Refractory Coating which is applied to refractory brickwork or plastic refractories by paint brush or spray gun. Composed of high-fusion clays and metal oxides combined in oils, the material fuses under heat to form a highly-glazed, monolithic protective coating over the entire refractory structure.

It is available in four grades to suit various operating temperatures: Vitrefying from 1450° F to 2800° F and for maximum temperatures from 2000° F to 3200°.

It practically eliminates cracking and spalling of brickwork, stops infiltration of outside air, greatly simplifies the removal of slag and clinker and, by reflecting heat back into the furnace, definitely increases firing efficiency. It is suitable for protection of oil—, gas—, or coal-fired equipment.

For further information, address American Engineer, reference No. 395.

BRANCH PIPE OUTLETS

A handbook of Branch Pipe Outlets is just off the press. A handy pocket-size manual for men responsible for piping, this 32-page handbook illustrates and explains the four simple steps in installing full pipe strength outlets by the WeldOlet Method. Also illustrates the tools needed to make the joint, the three types of fittings available for butt-welded, threaded and socket-welded branch pipes, and shows typical installations.

For further information, address American Engineer, reference No. 396.

AN INTERESTING CATALOG

This 32-page, illustrated catalog describes the facilities and products of the company. The subjects include Hot and Cold Stamping; Hand and Automatic Welding; Inspection; Heat Treating and Finishing; Machining; Engineering and Designing. Products include: Automotive Bus, Truck and Trailer Chassis Parts; Die Pressed Channels; Weldments; Tunnel Liners; Railway Cars, Repairs and Repair Parts.

For further information, address American Engineer, reference No. 397.

DE-IONIZED WATER FROM LAB UNITS

Development of compact laboratory units for producing purified water comparable to distilled water has been announced.

Large-size units, embodying the De-ionizing principle, have been in operation in nationally known plants for over five years. The laboratory units broaden the field of application, however, and provide laboratories and technicians with high flow rates from relatively small-size equipment. Cost of pure water produced by this equipment is 1% to 10% of the cost of distilled water, according to company officials.

The portable 12-gallons-per-hour unit weighs only 35 pounds; is 22 inches high, 13 inches wide, 8 inches deep. Larger laboratory units, providing 60 gph and 100 gph, are approximately 60 inches high, 30 inches wide, and 20 inches deep.

The De-ionizing process requires no heat, therefore no fuel, and it is entirely automatic in operation between regenerations. The raw water passes

through two beds of special synthetic resins, the first of which removes the positive ions, such as calcium, magnesium, sodium, iron, etc., and substitutes hydrogen. The hydrogen combines with the negative sulfate, chloride and nitrate, etc., ions, to form the equivalent acids. The acidic water passes to a second tank where the acids are removed by absorption.

According to the company's engineers, 10,000 gallons of De-ionized water can be produced for less than a dollar on the average raw water supply. When the supply is low in dissolved solids, it is reported, the cost may be considerably less.

In addition to its De-ionizing equipment, the company manufactures boiler feed-water treatment plants, zeolite and resinous-exchange softeners, filters, and many other types of treatment equipment for water and non-aqueous chemicals and the like.

For further information, address American Engineer, reference No. 398.

TOOL STEEL CATALOG

A 170-page, pocket-size catalogue and manual has just been released.

Double the size of preceding editions, the manual provides a complete and straight-forward coverage of tool steels for all uses and users. It contains many pages of technical data and is liberally illustrated. Thumb-indexing and sectional arrangement, plus a full general alphabetical index, make it easy to use.

For further information, address American Engineer, reference No. 399.

TRUSSES AND TEE-POSTS FOR CONCRETE FORMS

To eliminate the cumbersome and time-consuming method of building shoring out of lumber, for concrete forms and to reduce costs to construction projects, tubular steel Trusses and Tee-Posts have been developed.

Steel tubing having a tensile strength of 110,000 pounds per square inch, sturdy enough to handle any form, is used for making the Trusses and Tee-Posts.

Trusses are built sectionally, so that they can be quickly expanded or shortened for any need—thus making them practical for use with any architectural design. Tee-Posts, which have a screw adjustment feature at the bottom, similar to an automobile jack, may be used in conjunction with the trusses, thus making them equally practical for floor and wall shoring, as well as beams and pilasters.

Proven by field tests and actual use on large construction projects, this line of Trusses and Tee-Posts will soon be made available to builders on a purchase or lease basis, through equipment dealers.

For further information, address American Engineer, reference No. 400.

A UNIQUE COLD SETTING PLASTIC FOR MANY PURPOSES

A unique cold setting plastic originally developed for use as a filling material for junction boxes, stuffing boxes, pot-heads and similar void spaces encountered in electrical work is now available for many other uses. This liquid resin is mixed with a special setting agent prior to use. Approximately four hours after mixing, the two ingredients will gel at room temperature to the point where flow is no longer possible, and after several days, the end product is a tough rubbery mass which will not flow under heat nor become brittle in the cold. The set compound is insoluble in water, oil, acids and alkalies. Although the new material will adhere to metal, it can be stripped away cleanly when necessary.

Originally made for filling junction boxes on marine cable installations, this new and remarkable product is now of interest in all applications where a free flowing material is required which will set to form a rubbery solid.

For further information address American can Engineer, reference No. 401.

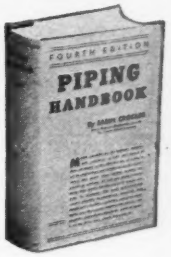
NON-FLAMMABLE THERMOSET PLASTIC

A new non-flammable thermoset plastic with high optical and electrical properties, good resistance to abrasion and high resistance to oils and greases and most chemicals, including acids and alkalies, is announced.

The product, one of a series of new thermosetting resins, is formed by polymerizing liquid monomer in the presence of a suitable catalyst. Low temperatures and no pressure are re-

(*Continued on page* 32)

Complete guide to piping design and application



— The data and methods you need for solving every piping problem

Revised, enlarged, 4th edition

An indispensable tool for the engineer, contractor, and designer, the famous PIPING HANDBOOK is now available in a fully revised 4th edition. This vast compilation of data and methods for most effective use of piping puts at your fingertips all the principles that influence the design, construction, and use of piping systems. *Any* fact, on any phase of piping practice, is here in clear, dependable, accessible form.

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By Sabin Crocker

Senior Engineer, Engineering Division, The Detroit Edison Company

1376 pages. 4½ x 7½, 334 illustrations, 329 tables. $7.00

This vast handbook covering the fundamentals, materials, and techniques of modern piping practice is now enlarged by 500 pages, including four new chapters in line with the increasing importance of piping systems in industrial operations, with tables and charts, abstracts, standards etc. revised and improved, and scores of new facts and figures added. Now more than ever the PIPING HANDBOOK is an invaluable self-contained key to effective piping practice.

Completely covers piping practice in these major fields: Steam power-plant piping, building heating, plumbing, underground steam piping, water-supply piping, fire-protection piping, oil and refinery piping, gas manufacture and distribution, refrigeration, hydraulic power transmission.

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(*Continued from page* 14)

All charges, unless dismissed by the Board as unfounded, or trivial, shall be heard by the Board within three months after date on which they shall have been preferred.

The time and place for said hearing shall be fixed by the Board and a copy of the charges, together with a notice of the time and place of hearing, shall be personally served on or mailed to the last known address to such registrant, at least 30 days before the date fixed for the hearing. At any hearing the accused registrant shall have the right to appear personally and/or by counsel, to cross-examine witness appearing against him and to produce evidence and witnesses in his own defense.

If, after such hearing, three or more members of the Board vote in favor of finding the accused guilty, the Board shall revoke the certificate of registration of such registered professional engineer or surveyor.

SECTION 36

The Board for reasons it deems sufficient, may reissue a certificate of registration to any person whose certificate has been revoked, providing three or more members of the Board vote in favor of such re-issuance. A new certificate of registration to replace any certificate revoked, lost, destroyed, or mutilated, may be issued subject to the rules of the Board, and a charge of two dollars shall be made for such issuance.

SECTION 37

It shall be the duty of all duly constituted officers of the law of this State, or any political subdivision thereof, to enforce the provisions of this Chapter and to prosecute any person violating same. The attorney general of the State, or his designated assistant, shall act as legal adviser of the Board and render such legal assistance as may be necessary in carrying out the provisions of this Act.

SECTION 38

This Act shall not be construed to affect or prevent the practice of any other legally recognized profession.

SECTION 39

The Joint-Secretary of the State Examining Boards shall serve as Secretary of the Board herein created in the same manner as provided by the Sections 84-101 and 84-102.

SECTION 40

That any person who shall practice, or offer to practice, the profession of engineering or land surveying in this State without being registered or exempted in accordance with the provisions of this Act, or any person presenting or atempting to use as his own the certificate of registration or the seal of another, or any person who shall give any false or forged evidence of any kind to the Board or to any member thereof in obtaining a certificate of registration, or any person who shall falsely impersonate any other registrant of like or different name, or any person who shall attempt to use an expired or revoked certificate of registration, or any person who shall violate any of the provisions of this Act, shall be prosecuted before a court of competent jurisdiction and if found guilty punished as for a misdemeanor and subject to fine or imprisonment at the option of the court, such fine shall be a minimum of one hundred ($100.00) dollars and not more than five hundred ($500.00) dollars, and such imprisonment shall be for a term not exceeding three months.

SECTION 41

That all laws and parts of law in conflict herewith be and the same are hereby repealed.

(*Continued from page* 31)

quired. It is a somewhat viscous, water-clear, anhydrous liquid having a specific gravity of 1.25 which can be cast in simple molds. It sets to a hard, heat resistant plastic. No water or other volatile products are released during the polymerization, making easy the preparation of dense, nonporous articles. Shrinkage during polymerization is substantially lower than that of any other known material of the type.

Some immediate applications which have been suggested for the new material are in the optical industry where its excellent refractive index and good physical properties make it a promising material for optical lenses, prisms, or transparent sheets; the electrical industry, where its electrical and physical characteristics suggest its use in making insulators, control knobs, handles, panels, or other molded insulating parts, especially in the high frequency range; the chemical and processing industries where its imperviousness to corrosive materials and solvents should make it valuable in fabricating parts for equipment, such as, valves, pumps, agitators, controls, or for any equipment exposed to corrosive fumes, vapors and liquids; as a low pressure laminant for paper, fabrics and wood for mechanical services; and finally, the fields of fashion and decoration where its jewel-like appearance, coupled with its other excellent properties, suggest it for applications where beauty and eye appeal must be accompanied by utilitarian values.

The company plans to offer the material only in the liquid monomer state and does not expect to do any fabrication, but is anxious to work closely with manufacturers in developing new products made from this raw material.

For further information, address American Engineer, reference No. 402.

Members are urged to avail themselves of this section of The American Engineer, to provide information on any equipment manufactured by firms with which they are connected, or to forward copies of new catalogs, bulletins, etc. which they consider would be of interest to the rest of the membership.

This of course involves no obligation on their part, the only stipulation being that the products be new or improved, and that the literature be of recent publication.

ENGINEERS WANTED

MECHANICAL
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Preferably those with

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Or others with at least several years of engineering experience which will serve as a basis for aircraft work.
Permanent positions are available in the engineering of such planes as the Martin 202 transport, commercial version of the Martin MARS, and other new commercial and military commitments. Write including full information on education, experience and background,

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